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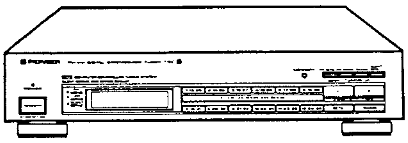
The future of sound and vision.

Service Manual



ORDER NO.
ARP1997

FM/AM DIGITAL SYNTHESIZER TUNER

F-447
F-447-S
F-447L

MODEL F-447, F-447-S AND F-447L HAVE FOLLOWING VERSIONS:

Type	Applicable model			Power requirement	Export destination
	F-447	F-447-S	F-447L		
HEWZ	○	○	×	AC220V, 240V(switchable)*	West Germany
HE	×	×	○	AC220V, 240V(switchable)*	European continent
HB	×	×	○	AC220V, 240V(switchable)*	United Kingdom
KUC	○	×	×	AC120V only	U.S.A. and Canada
SD	○	×	×	AC110V, 120-127V, 220V, 240V(switchable)	Kingdom of Saudi Arabia and General market
SD/G	○	×	×	AC110V, 120-127V, 220V, 240V(switchable)	U.S. Military
YPW	○	×	×	AC240V only	Australia
HEWX1B	×	×	○	AC220V, 240V(switchable)*	European continent
HIX1B	○	×	×	AC220V, 240V(switchable)*	Itary

* Change the primary wiring of the power transformer.

- **This manual is applicable to the F-447/HEWZ, F-447-S/HEWZ, F-447L/HE and HB types.**
- **As to the F-447-S/HEWZ, F-447L/HE and HB types, refer to page 31.**
- **As to the other types, refer to applicable service manuals.**
- **The F-447-S is the same as the F-447 except for color.**
- **The F-447L covers MW/LW bands while the F-447 and F-447-S covers MW only.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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FV APR. 1990 Printed in Japan

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

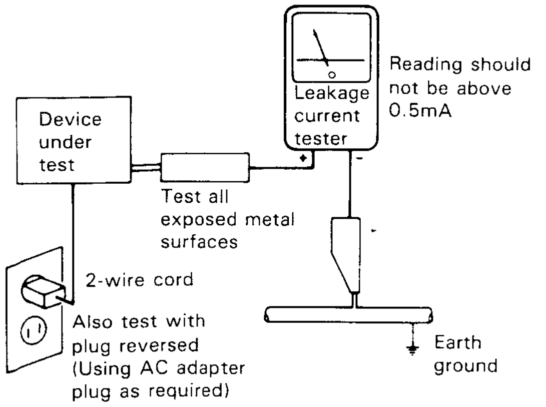
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS, PAKING AND PARTS LIST

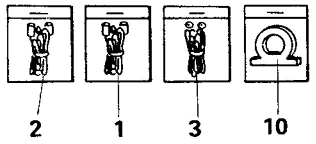
NOTES:
- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of indetical designation.*

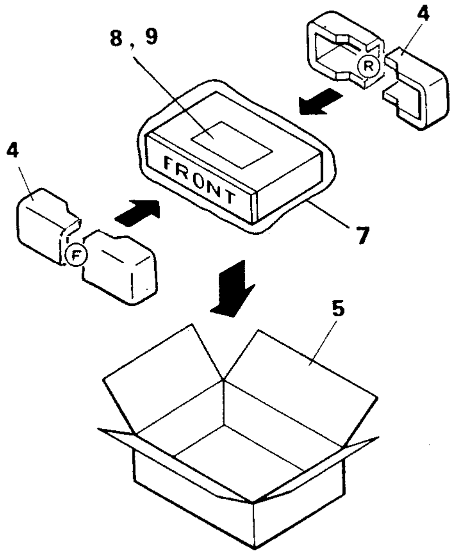
PARTS LIST OF EXTERIOR

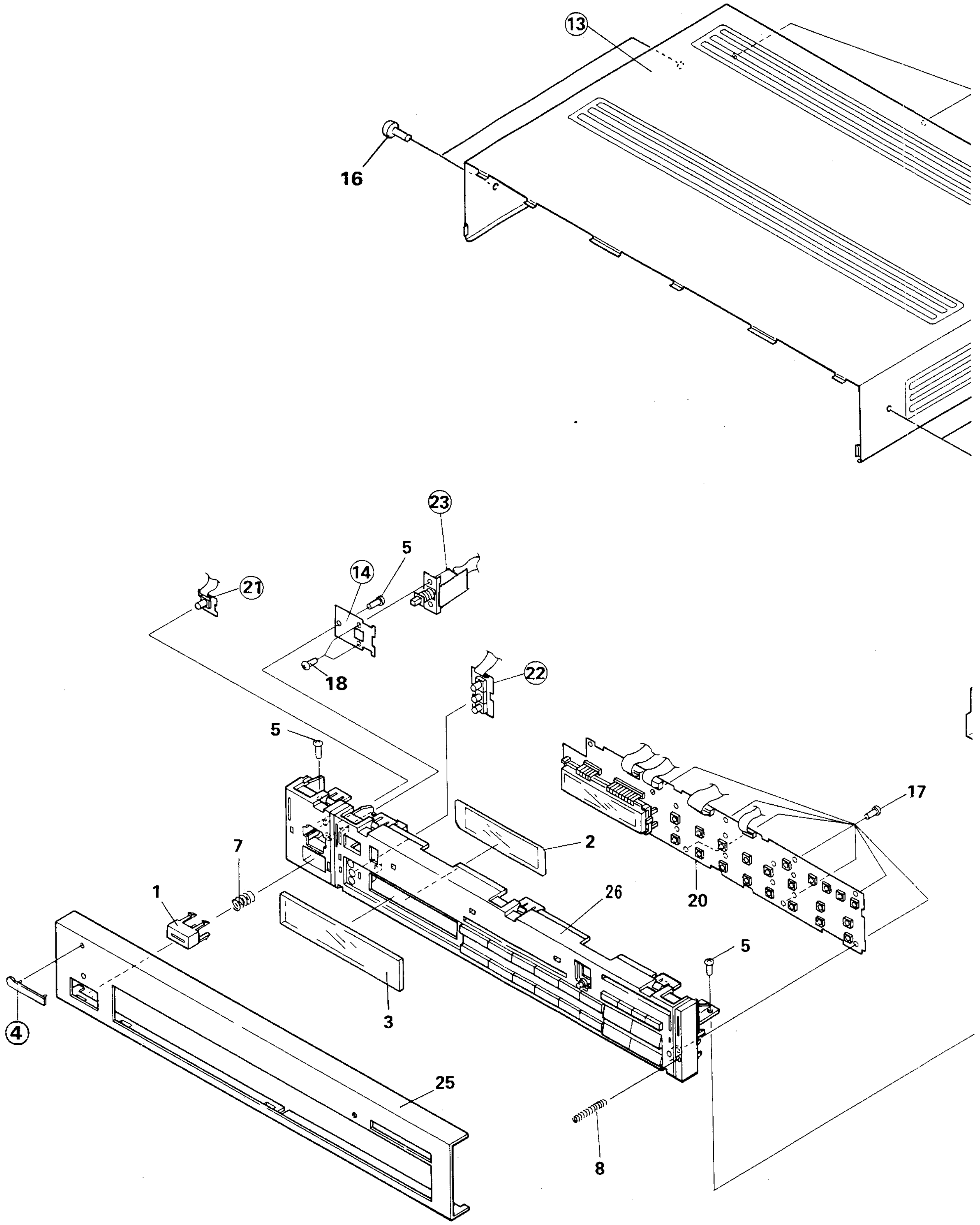
Mark	No. & Description	Part No.
	1. POWER KNOB	AAD1535
	2. FL FILTER	AAK1481
	3. DISPLAY PANEL	AAK1930
	4. NAME PLATE	
	5. SCREW	ABA-298
	6. SCREW (STEEL)	ABA1047
	7. COILED SPRING	ABH1019
	8. COILED SPRING	ABH1036
⚠	9. AC POWER CORD	ADG1010
	10. INSULATOR ASSEMBLY	AMR2140
	11. CHASSIS ASSEMBLY	
	12. REAR PANEL	
	13. BONNET	
	14. SWITCH HOLDER	
	15. ······	·····
	16. SCREW	BBT30P080FZK
	17. SCREW	BBZ26P080FMC
	18. SCREW	VMZ30P060FMC
⚠	19. FUSE	AEK-407
	20. FRONT PANEL ASSEMBLY (P.C.B)	AWZ1823
	21. POWER IND ASSEMBLY (P.C.B)	
	22. LED ASSEMBLY	
	23. POWER SW ASSEMBLY	
	24. MAIN ASSEMBLY	AWZ2873
	25. FRONT PANEL ASSEMBLY	ANB1390
	26. PANEL BASE ASSEMBLY	AMD1035

PARTS LIST OF PACKING

Mark	No. & Description	Part No.
	1. PLUG CORD	ADE-044
	2. CORD WITH PLUG	ADE-085
	3. FM ANTENNA	ADH1002
	4. PAD(F/R)	AHA1095
	5. PACKING CASE	AHD1836
	6.	
	7. PACKING SHEET	AHG1017
	8. OPE.INSTRUCTIONS	ARC1188
	9. WARRANTY CARD	
	10. LOOP ANTENNA	ATB1005

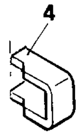


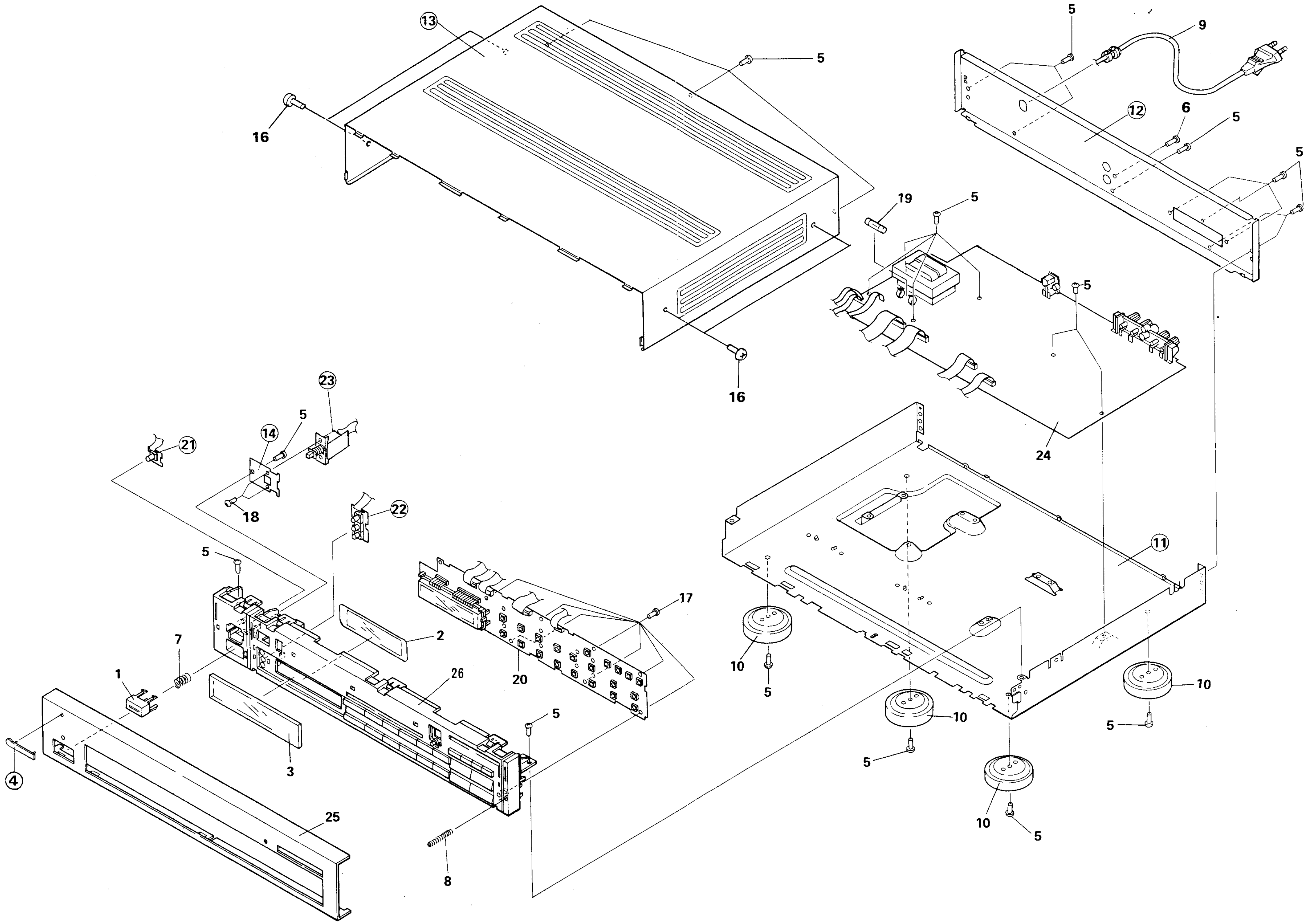




ey may be

Therefore,




1
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4
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A
B
C
D
⑬
5
16
16
9
5
⑫
6
5
5
19
5
5
24
㉓
㉑
⑭
5
18
㉒
⑪
5
17
7
2
1
26
20
10
5
10
10
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5
10
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10
5
3
④
25
8
1
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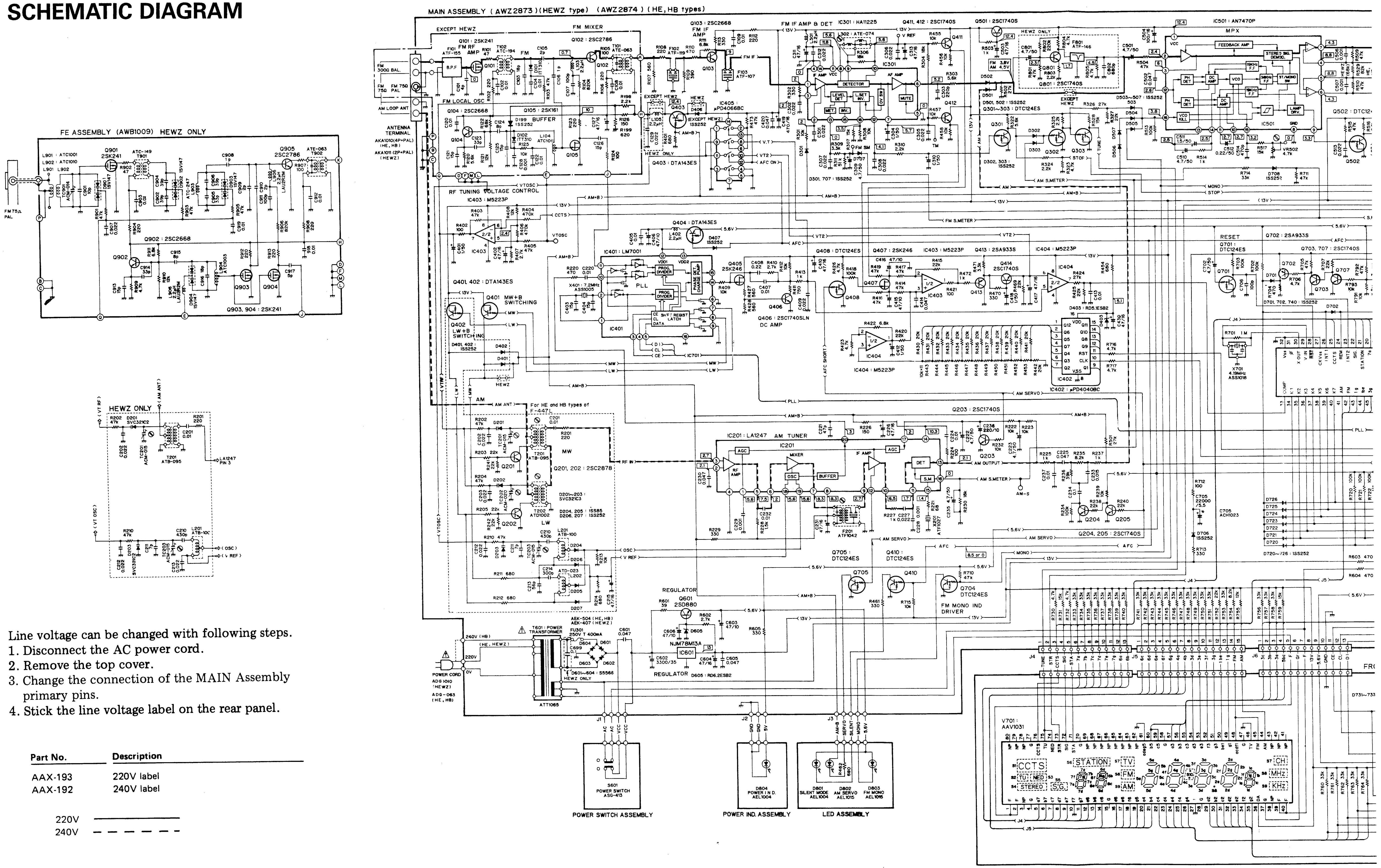
6

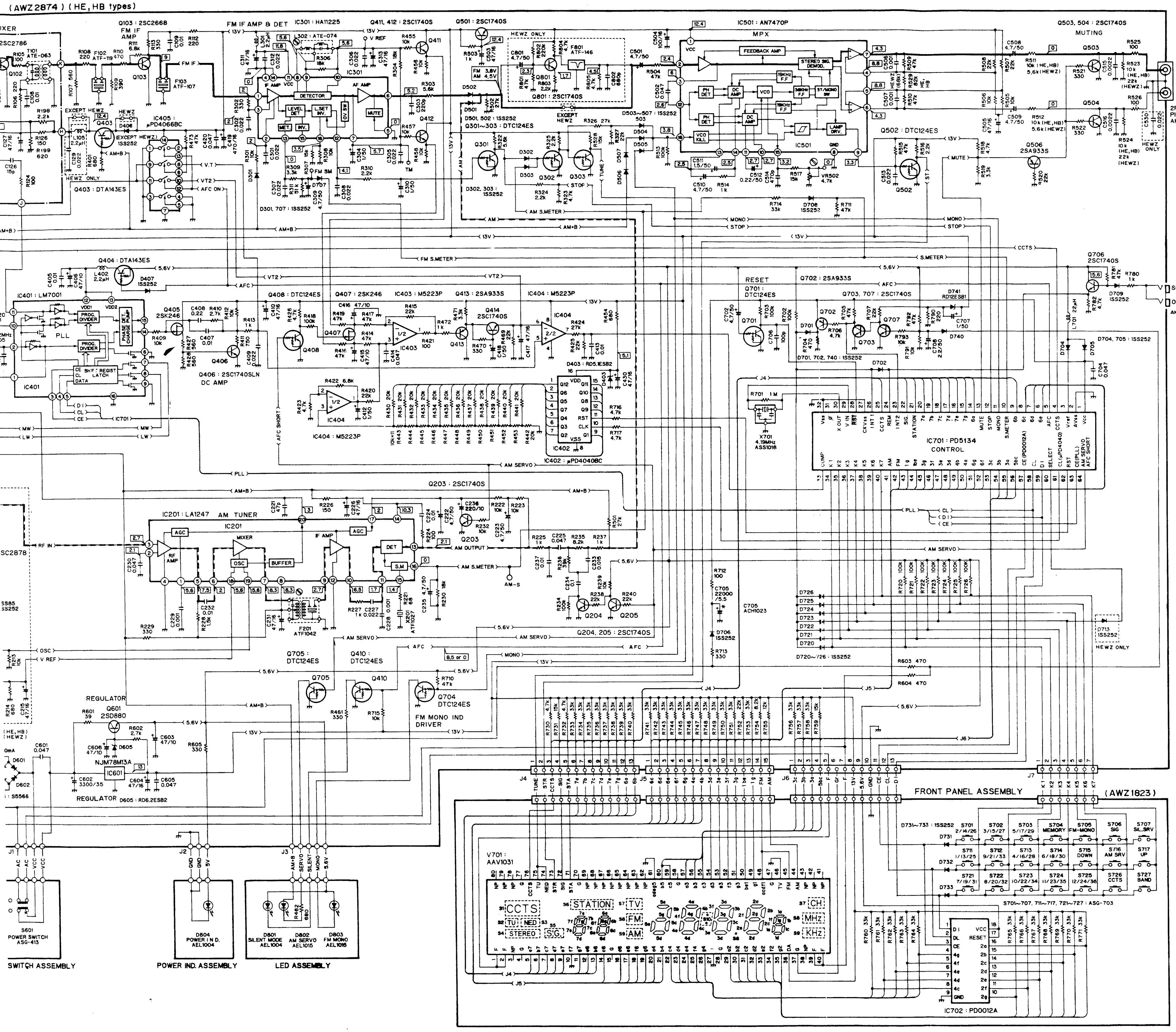
3. SCHEMATIC DIAGRAM


MAIN ASSEMBLY (AWZ2873)(HEWZ type) (AWZ2874)(HE, HB types)
FE ASSEMBLY (AWB1009) HEWZ ONLY
HEWZ ONLY
EXCEPT HEWZ
FM MIXER
FM LOCAL OSC
FM IF AMP & DET
IC301 : HA11225
IC501 : AN7470P
MPX
RF TUNING VOLTAGE CONTROL
IC403 : M5223P
IC401 : LM7001
PLL
IC402 : μPD4040BC
IC201 : LA1247 AM TUNER
ANTENNA TERMINAL
REGULATOR
IC601 NJM78M13A
T601 : POWER TRANSFORMER
V701 : AAV1031
POWER SWITCH ASSEMBLY
POWER IND. ASSEMBLY
LED ASSEMBLY
FM MONO IND DRIVER

Line voltage can be changed with following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection of the MAIN Assembly primary pins.
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

220V ————
240V – – – – – –


(AWZ2874) (HE,HB types)
4
5
6
7
8
9
A
B
C
D
FM IF AMP & DET
IC301 : HA11225
Q411, 412 : 2SC1740S
Q501 : 2SC1740S
IC501 : AN7470P
MPX
Q503, 504 : 2SC1740S
MUTING
Lch
Rch
2P PIN JACK AKB1039
Q103 : 2SC2668
FM IF AMP
IC405 : μPD4066BC
Q403 : DTA143ES
Q404 : DTA143ES
IC401 : LM7001
PLL
Q405 2SK246
Q406 : 2SC1740SLN DC AMP
Q408 : DTC124ES
Q407 : 2SK246
IC403 : M5223P
Q413 : 2SA933S
IC404 : M5223P
Q502 : DTC124ES
Q506 2SA933S
Q706 2SC1740S
SR IN
OUT
AKN-207
RESET Q701 : DTC124ES
Q702 : 2SA933S
Q703, 707 : 2SC1740S
IC402 : μPD4040BC
IC701 : PD5134 CONTROL
X701 4.19MHz ASS1018
IC201 : LA1247 AM TUNER
Q203 : 2SC1740S
Q204, 205 : 2SC1740S
C705 ACH1023
D720~726 : 1SS252
HEWZ ONLY
Q705 : DTC124ES
Q410 : DTC124ES
Q704 DTC124ES FM MONO IND DRIVER
REGULATOR Q601 2SD880
NJM78M13A IC601
REGULATOR D605 : RD6.2ESB2
J4
J5
J6
J7
FRONT PANEL ASSEMBLY (AWZ1823)
V701 : AAV1031
CCTS
STATION
TV
CH
TU
NED
FM
MHz
STEREO
SIG
AM
KHz
S701 2/14/26
S702 3/15/27
S703 5/17/29
S704 MEMORY
S705 FM-MONO
S706 SIG
S707 SIL.SRV
S711 1/13/25
S712 9/21/33
S713 4/16/28
S714 6/18/30
S715 DOWN
S716 AM SRV
S717 UP
S721 7/19/31
S722 8/20/32
S723 10/22/34
S724 11/23/35
S725 12/24/36
S726 CCTS
S727 BAND
S701~707, 711~717, 721~727 : ASG-703
IC702 : PD0012A
S601 POWER SWITCH ASG-413
SWITCH ASSEMBLY
D804 POWER IND. AEL1004
POWER IND. ASSEMBLY
D801 SILENT MODE AEL1004
D802 AM SERVO AEL1015
D803 FM MONO AEL1015
LED ASSEMBLY

1. RESISTORS:
Indicated in Ω, 1/8, 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.

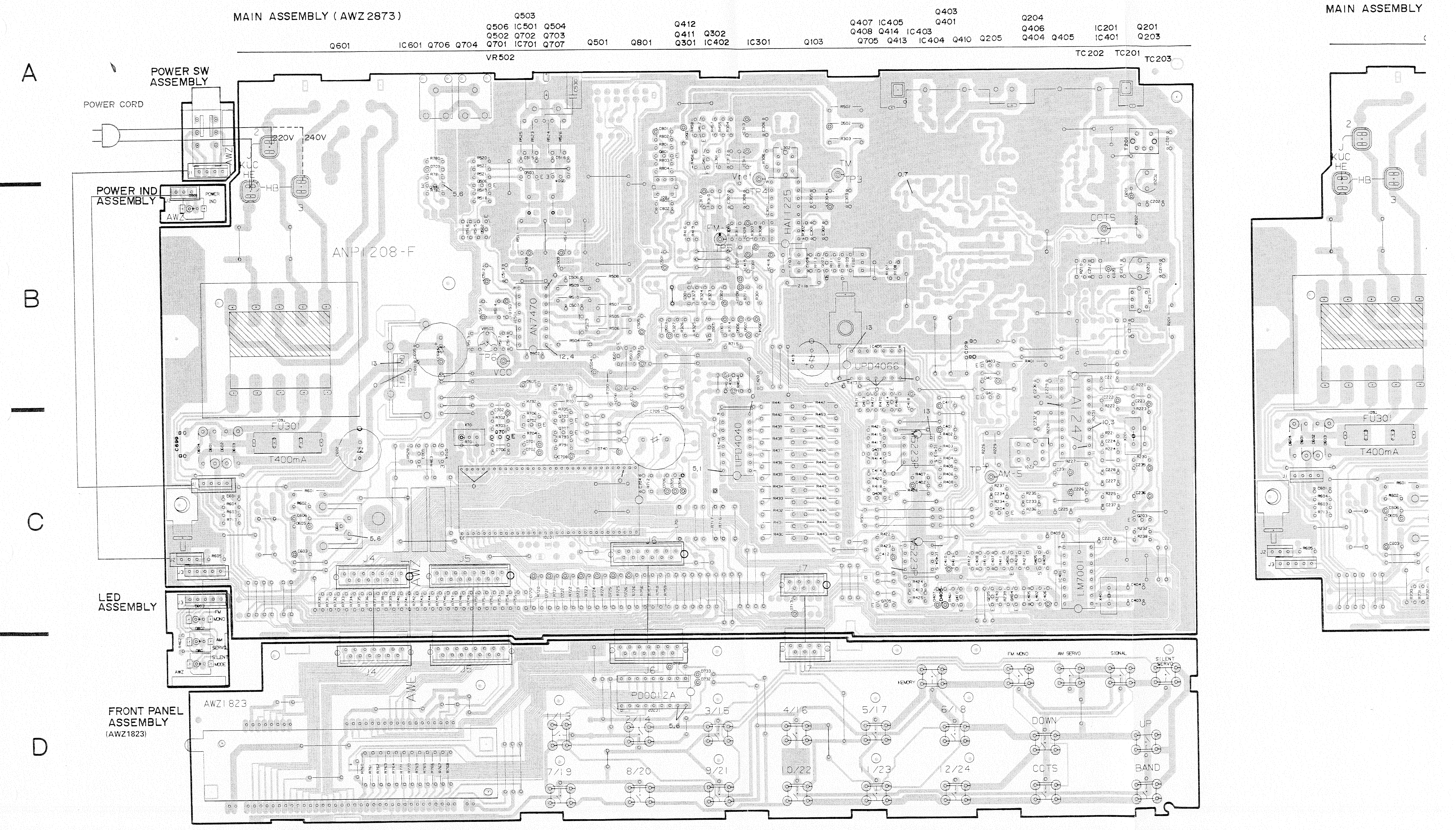
2. CAPACITORS:
Indicated in capacity (μF)/ voltage (V) unless otherwise noted p;pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:
▭ ; DC voltage (V) at no input signal.
Value in (1) is DC voltage at rated power.
⇦mA ; DC current at no input signal.
mV ; Signal voltage at FM 400Hz±75Hz DEV.

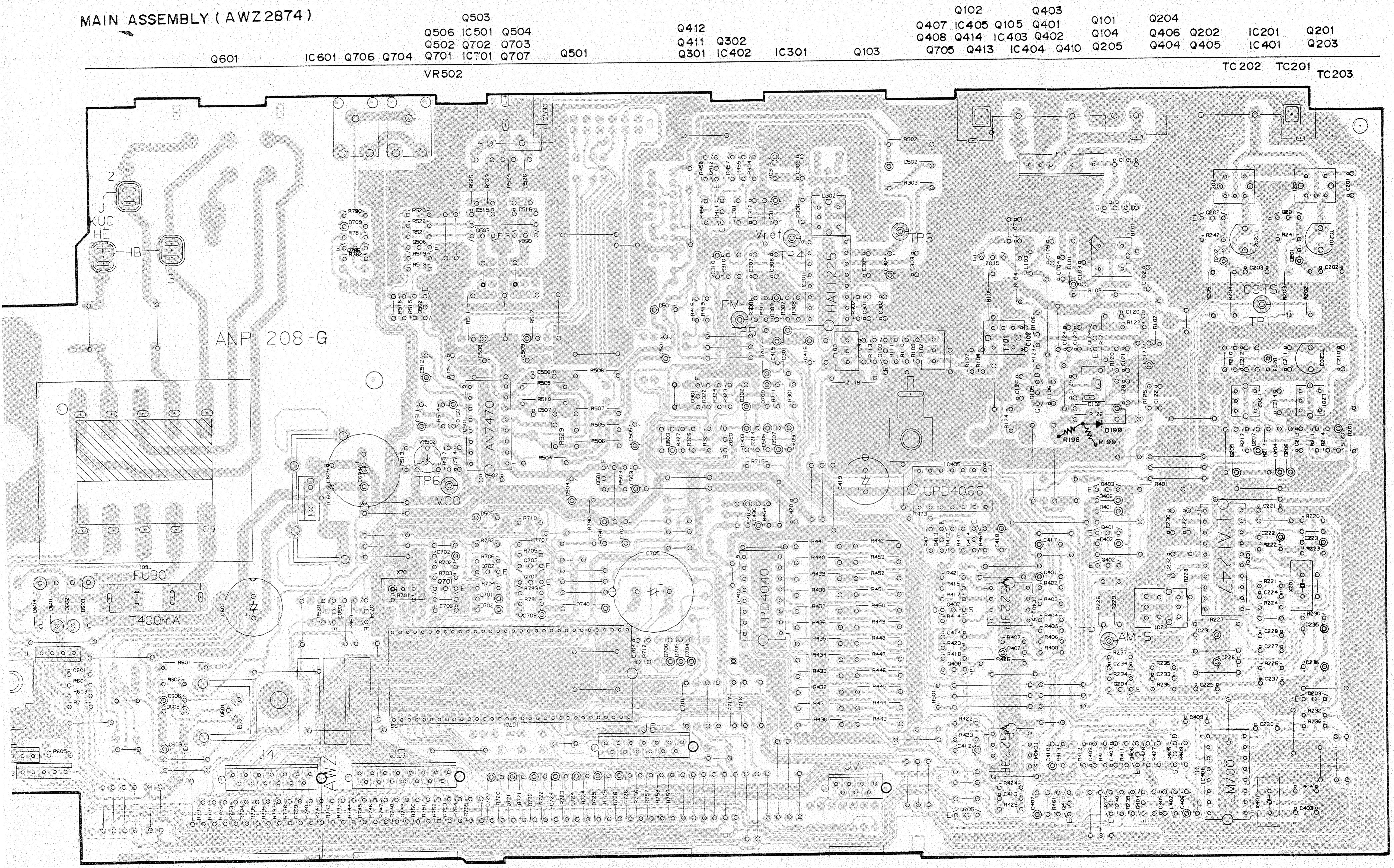
4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safty factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitor and resistor have parts number.
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:
FRONT PANEL ASSEMBLY
S701: 2/14/26
S702: 3/15/27
S703: 5/17/29
S704: MEMORY
S705: FM-MONO
S706: SIG
S707: SIL.SRV
S711: 1/13/25
S712: 9/21/33
S713: 4/16/28
S714: 6/18/30
S715: DOWN
S716: AM SRV
S717: UP
S721: 7/19/31
S722: 8/20/32
S723: 10/22/34
S724: 11/23/35
S725: 12/24/36
S726: CCTS
S727: BAND
POWER SWITCH ASSEMBLY
S601: POWER ON – OFF
The underline indicates the switch position.

4. P.C.BOARDS CONNECTION DIAGRAM

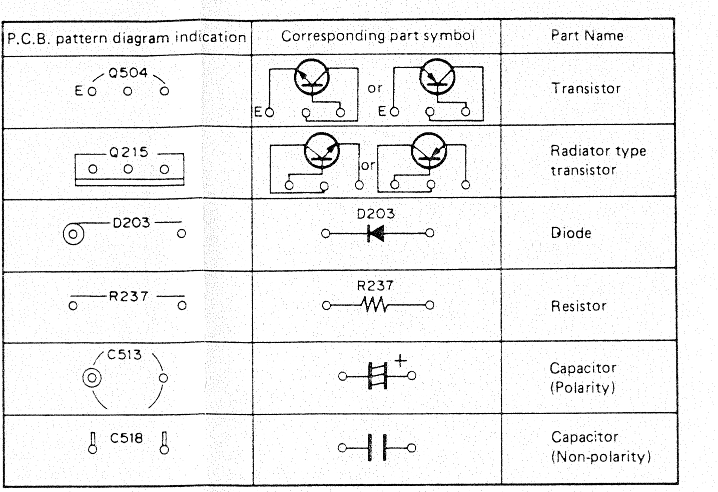

MAIN ASSEMBLY (AWZ 2873)
Q601
IC601 Q706 Q704
Q506 Q502 Q701
Q503 IC501 Q702 IC701
Q504 Q703 Q707
VR502
Q501
Q801
Q412 Q411 Q301
Q302 IC402
IC301
Q103
Q407 Q408 Q705
IC405 Q414 Q413
IC403 IC404
Q403 Q401 Q410
Q205
Q204 Q406 Q404
Q405
IC201 IC401
Q201 Q203
TC202 TC201 TC203
A
B
C
D
POWER SW ASSEMBLY
POWER CORD
220V
240V
KUC
HE
HB
POWER IND ASSEMBLY
AWZ
ANP1208-F
FU301
T400mA
VCC
AN7470
UPD4066
UPD4040
HA11225
LA1247
LM7001
TP1 CCTS
TP2 AM-S
TP3 TM
TP4 Vref
FM
J4
J5
J6
J7
LED ASSEMBLY
FM MONO
AM SERVO
SILENT MODE
FRONT PANEL ASSEMBLY (AWZ1823)
AWZ1823
AWE
PD0012A
1/13
2/14
3/15
4/16
5/17
6/18
7/19
8/20
9/21
10/22
11/23
12/24
MEMORY
FM MONO
AM SERVO
SIGNAL
SILENT SERVO
DOWN
UP
CCTS
BAND
MAIN ASSEMBLY
FU301
T400mA

MAIN ASSEMBLY (AWZ2874)


Q601
IC601 Q706 Q704
Q506 Q502 Q701
Q503 IC501 Q702 IC701
Q504 Q703 Q707
VR502
Q501
Q412 Q411 Q301
Q302 IC402
IC301
Q103
Q407 Q408 Q705
Q102 IC405 Q414 Q413
Q105 IC403 IC404
Q403 Q401 Q402 Q410
Q101 Q104 Q205
Q204 Q406 Q404
Q202 Q405
IC201 IC401
Q201 Q203
TC202 TC201 TC203
ANP1208-G
AN7470
HA11225
UPD4066
UPD4040
LA1247
LM7001
FU301
T400mA
J4
J5
J6
J7
TP3
TP4
TP6
TP7
VCO
Vref
FM-
CCTS
AM-S
KUC
HE
HB
2
3

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.



P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

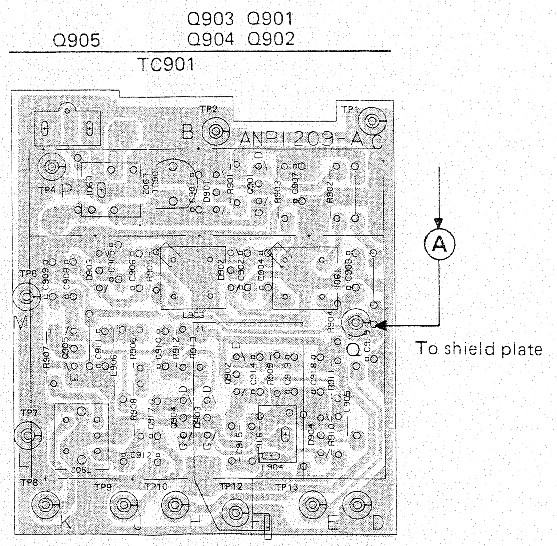
Others

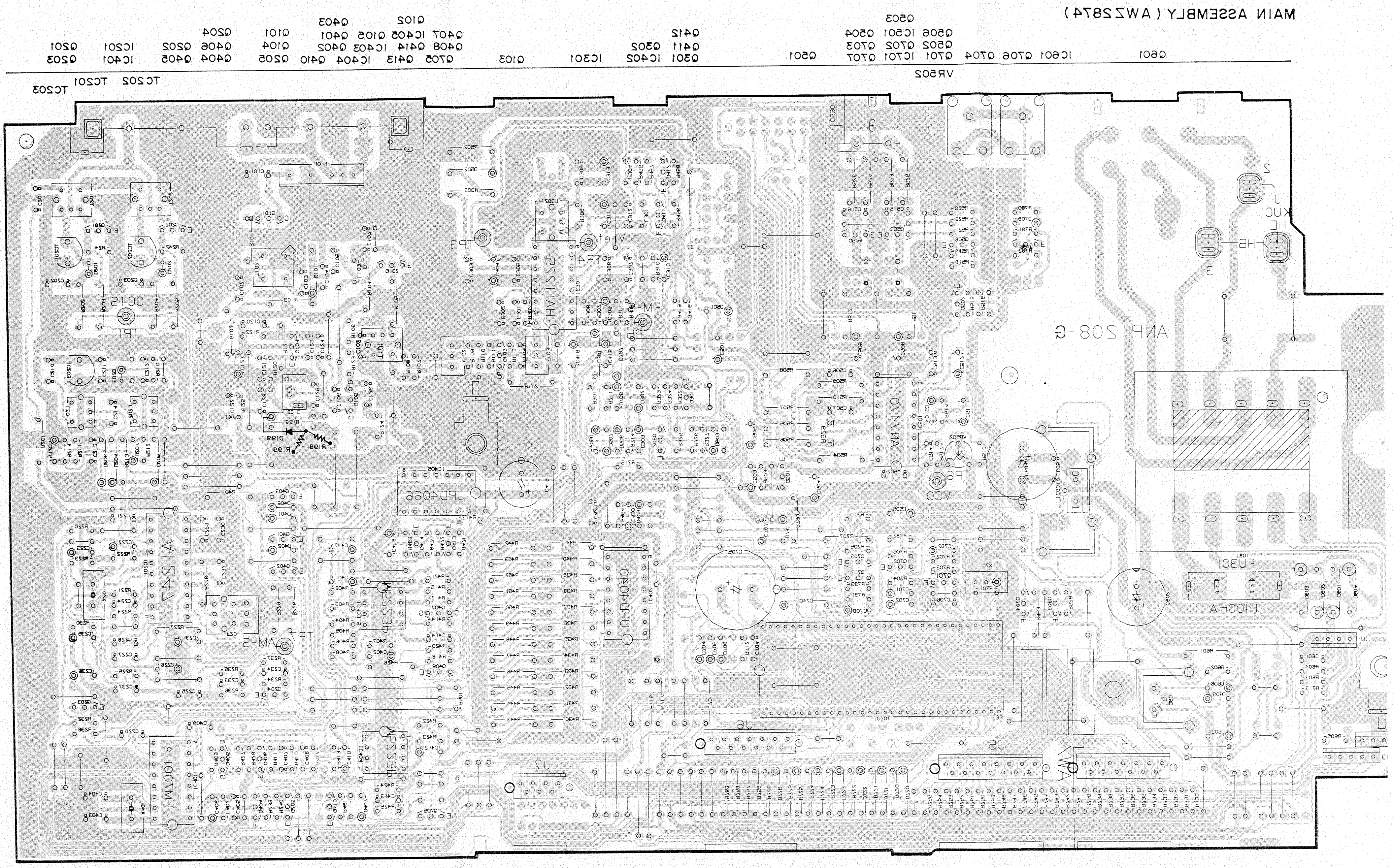
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

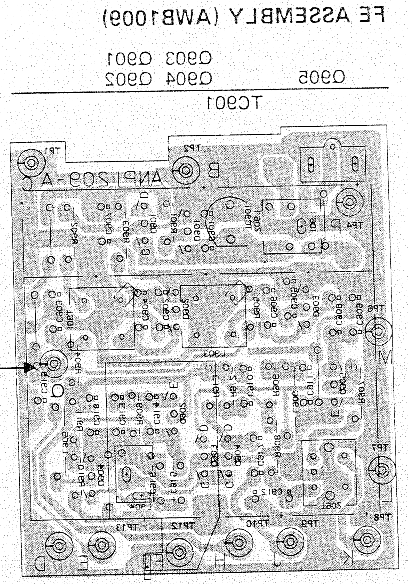
3. The capacitor terminal marked with ◎ (double circles) shows negatine termianl.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

HEWZ type

FE ASSEMBLY (AWB1009)

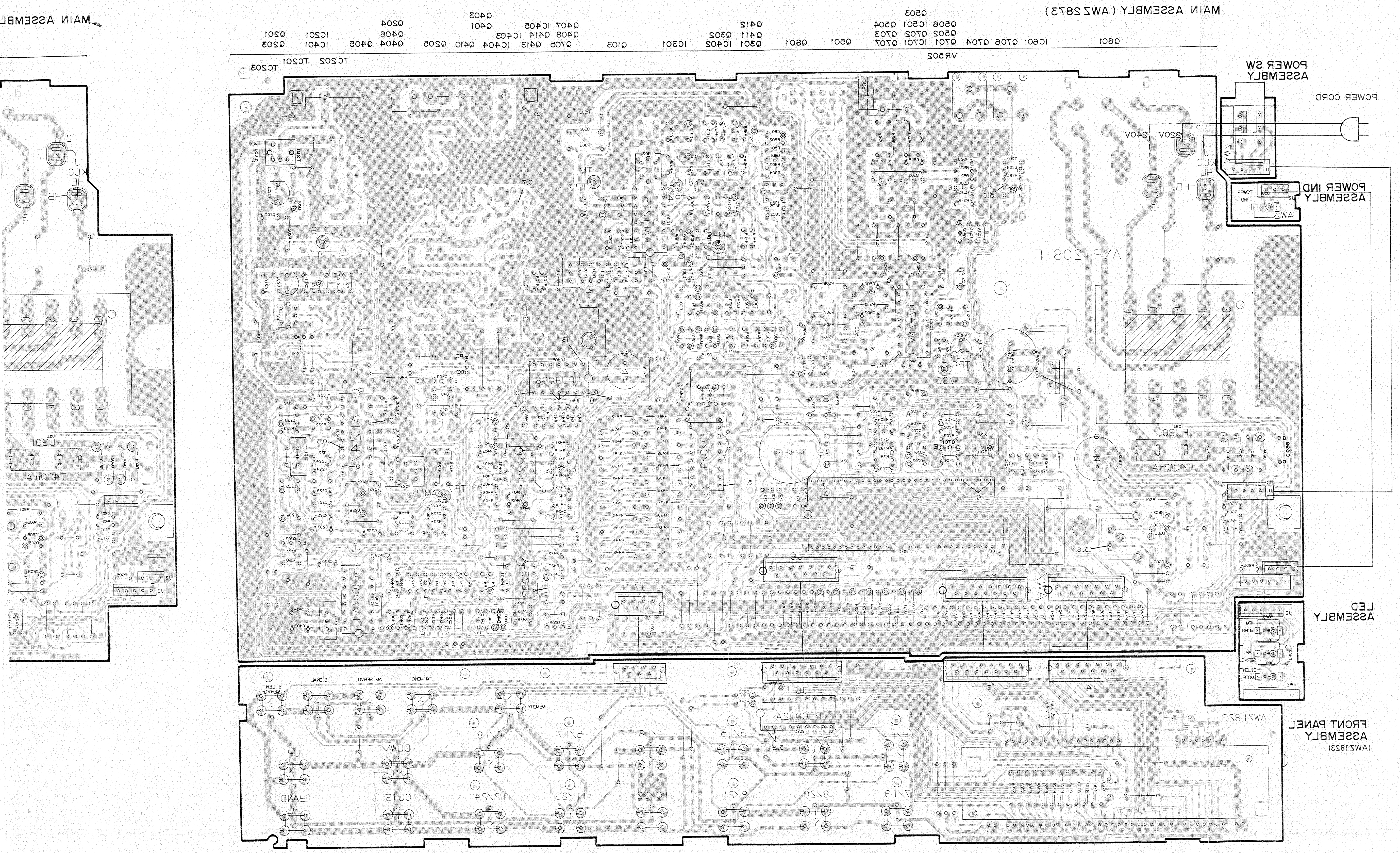

Q905
Q903 Q901
Q904 Q902
TC901
ANP1209-A
B
TP1
TP2
TP4
TP6
TP7
TP8
TP9
TP10
TP12
TP13
K
J
H
E
D
A
To shield plate


MAIN ASSEMBLY (AWZ2874)
ANP1208-G
uPD4066
LM7001
FU301
T400mA
VCC
TP1
TP3
TP4
TP6
AM-S
FM
J4
J5
J6
J7


HEWZ type
FE ASSEMBLY (AWB1009)
ANP1209-A
To shield plate
A

This P.C.B. connection diagram is viewed from the foil side.

4. P.C.BOARDS CONNECTION DIAGRAM


MAIN ASSEMBLY (AWZ2873)
MAIN ASSEMBL
POWER SW ASSEMBLY
POWER CORD
POWER IND ASSEMBLY
LED ASSEMBLY
FRONT PANEL ASSEMBLY (AWZ1823)
AWZ1823
ANP1208-F
FU301
T400mA
220V
240V
VR502
TC201
TC202
TC203
J1
J4
J5
J6
BAND
UP
DOWN
CCTS
MEMORY
SIGNAL
SILENT
SERVO
AM SERVO
FM MONO
Q601
IC601 Q706 Q704
Q501
Q801
Q301 IC402 Q302
IC301
Q103
Q205
Q401
Q403
Q204
Q206
Q404
Q405
IC401 Q203
IC201 Q201

1
2
3
4
5
6
A
B
C
D

5. P.C.B'S PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of indetical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%)*

560Ω 56×10^1 *561*..............................*RD1/4PS* $\boxed{5}\boxed{6}\boxed{1}$ *J*
47kΩ 47×10^3 *473*..............................*RD1/4PS* $\boxed{4}\boxed{7}\boxed{3}$ *J*
0.5Ω *0R5*..............................*RN2H* $\boxed{0}\boxed{R}\boxed{5}$ *K*
1Ω *010*..............................*RS1P* $\boxed{0}\boxed{1}\boxed{0}$ *K*

Ex.2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ 562×10^1 *5621*..............................*RN1/4SR* $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ *F*

FRONT PANEL ASS'Y (AWZ1823)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC702 OUTPUT EXPANDER IC	PD0012A
	D731−733 DIODE	1SS252

SWITCHES

Mark	Symbol & Description	Part No.
	S701−707 TACT SWITCH	ASG-703
	S711−717 TACT SWITCH	ASG-703
	S721−727 TACT SWITCH	ASG-703

RESISTORS

Mark	Symbol & Description	Part No.
	R760−771 CARBONFILM RESISTOR	RD1/8PM333J

OTHERS

Mark	Symbol & Description	Part No.
	V701 FL TUBE	AAV1031

POWER IND ASS'Y

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D804 LED	AEL1004

LED ASS'Y

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D801 LED	AEL1004
	D802, 803 LED	AEL1015

POWER SW ASS'Y

SWITCHES

Mark	Symbol & Description	Part No.
⚠	S601 PUSH SWITCH	ASG-413

MAIN ASSEMBLY (AWZ2873)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC201 AM IC	LA1247
	IC301 FM IC	HA11225
	IC401 PLL IC	LM7001
	IC402 LOGIC IC	UPD4040BC
	IC403, 404 OP-AMP IC	M5223P
	IC405 LOGIC IC	UPD4066BC
	IC501 MPX IC	AN7470P
	IC601 REGURATOR IC	NJM78M13A
	IC701 TUNER CONTROL	PD5134
	Q103 TRANSISTOR	2SC2668
	Q203−205 TRANSISTOR	2SC1740S
	Q301−303 TRANSISTOR	DTC124ES
	Q401 TRANSISTOR	DTA143ES
	Q403, 404 TRANSISTOR	DTA143ES
	Q405 N-FET	2SK246
	Q406 TRANSISTOR	2SC1740SLN
	Q407 N-FET	2SK246
	Q408 TRANSISTOR	DTC124ES
	Q410 TRANSISTOR	DTC124ES
	Q411, 412 TRANSISTOR	2SC1740S
	Q413 TRANSISTOR	2SA933S
	Q414 TRANSISTOR	2SC1740S
	Q501 TRANSISTOR	2SC1740S
	Q502 TRANSISTOR	DTC124ES
	Q503, 504 TRANSISTOR	2SC1740S
	Q506 TRANSISTOR	2SA933S
	Q601 TRANSISTOR	2SD880
	Q701 TRANSISTOR	DTC124ES
	Q702 TRANSISTOR	2SA933S
	Q703 TRANSISTOR	2SC1740S
	Q704, 705 TRANSISTOR	DTC124ES
	Q706, 707 TRANSISTOR	2SC1740S
	Q801 TRANSISTOR	2SC1740S
	D201 VARI-CAP DIODE	SVC321C2
	D203 VARI-CAP DIODE	SVC321C2
	D301−303 DIODE	1SS252
	D403 ZENER DIODE	RD5.1ESB2
	D407 DIODE	1SS252

Mark	Symbol & Description	Part No.
	D501−507 DIODE	1SS252
⚠	D601−604 DIODE	S5566
	D605 ZENER DIODE	RD6.2ESB2
	D701, 702 DIODE	1SS252
	D704−709 DIODE	1SS252
	D713 DIODE	1SS252
	D720−726 DIODE	1SS252
	D740 DIODE	1SS252
	D741 ZENER DIODE	RD12ESB1

COILS, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	L105 AXIAL INDUCTOR	LAU2R2M
	L201 COIL	ATB-100
	L301 AXIAL INDUCTOR	LAU2R2M
	L302 COIL	ATE-074
	L402 AXIAL INDUCTOR	LAU2R2M
	L701 AXIAL INDUCTOR	LAU220K
	T201 COIL	ATB-095
⚠	T601 POWER TRANSFORMER	ATT1065
	F102 CERAMIC FILTER	ATF-119
	F103 CERAMIC FILTER	ATF-107
	F201 CERAMIC FILTER	ATF1042
	F801 FILTER	ATF-146

CAPACITORS

Mark	Symbol & Description	Part No.
	TC201 CERAMIC TRIMMER	ACM-015
	TC203 CERAMIC TRIMMER	ACM-015
	C109 CERAMIC CAPACITOR	CKDYF103Z50
	C129 CERAMIC CAPACITOR	CKDYF223Z50
	C201 CERAMIC CAPACITOR	CKDYF103Z50
	C202 CERAMIC CAPACITOR	CKDYF223Z50
	C210 CAPACITOR	CQSA431J50
	C211 CERAMIC CAPACITOR	CCMCH070D50
	C212, 213 CERAMIC CAPACITOR	CKDYF223Z50
	C220 CERAMIC CAPACITOR	CKDYF103Z50
	C221 CERAMIC CAPACITOR	CCMCH470J50
	C222, 223 ELECTR.CAPACITOR	CEAS4R7M50
	C224 CERAMIC CAPACITOR	CKDYF103Z50
	C225 CERAMIC CAPACITOR	CKDYX473M25
	C226 ELECTR.CAPACITOR	CEAS470M16
	C227 CERAMIC CAPACITOR	CKDYF223Z50
	C228 CERAMIC CAPACITOR	CKMYF102Z50
	C229 CERAMIC CAPACITOR	CKMYB102K50
	C230 CERAMIC CAPACITOR	CKDYF473Z50
	C231 ELECTR.CAPACITOR	CEAS470M16
	C232 CERAMIC CAPACITOR	CKDYF103Z50
	C233 CERAMIC CAPACITOR	CKDYX153M25
	C234 CERAMIC CAPACITOR	CKDYX104M25
	C235 ELECTR.CAPACITOR	CEAS4R7M50
	C236 ELECTR.CAPACITOR	CEAS221M10
	C237 CERAMIC CAPACITOR	CKDYB103K50
	C301, 302 CERAMIC CAPACITOR	CKDYF223Z50
	C303 CERAMIC CAPACITOR	CCDSL221J50
	C304 ELECTR.CAPACITOR	CEAS010M50
	C305−308 CERAMIC CAPACITOR	CKDYF223Z50
	C309 ELECTR.CAPACITOR	CEAS4R7M50
	C310 ELECTR.CAPACITOR	CEAS010M50
	C311 ELECTR.CAPACITOR	CEAS470M16
	C312 CERAMIC CAPACITOR	CKDYF223Z50
	C313 ELECTR.CAPACITOR	CEAS470M16
	C401 ELECTR.CAPACITOR	CEAS010M50
	C402 ELECTR.CAPACITOR	CEAS470M16
	C403, 404 CERAMIC CAPACITOR	CCMCH150J50
	C405 CERAMIC CAPACITOR	CKDYF103Z50
	C406 ELECTR.CAPACITOR	CEAS470M16
	C407 CERAMIC CAPACITOR	CKDYB103K50
	C408 AUDIO FILM CAPACITOR	CFTXA224J50
	C409 CERAMIC CAPACITOR	CKDYF223Z50
	C410 ELECTR.CAPACITOR	CEAS470M16
	C412 ELECTR.CAPACITOR	CEAS010M50
	C413 CERAMIC CAPACITOR	CKDYF103Z50
	C414 CERAMIC CAPACITOR	CKDYX473M25
	C415, 416 ELECTR.CAPACITOR	CEAS470M10
	C417 ELECTR.CAPACITOR	CEAS470M16
	C418 ELECTR.CAPACITOR	CEAS010M50
	C419 ELECTR.CAPACITOR	CEAS471M16
	C420 CERAMIC CAPACITOR	CKDYF473Z50
	C430 ELECTR.CAPACITOR	CEAS470M16
	C501 ELECTR.CAPACITOR	CEAS4R7M50
	C502 CERAMIC CAPACITOR	CKDYF473Z50
	C503 ELECTR.CAPACITOR	CEAS470M16
	C504 ELECTR.CAPACITOR	CEAS101M16
	C505 ELECTR.CAPACITOR	CEAS470M16
	C506, 507 CERAMIC CAPACITOR	CKMYB102K50
	C508−510 ELECTR.CAPACITOR	CEAS4R7M50
	C511 ELECTR.CAPACITOR	CEAS1R5M50
	C512 ELECTR.CAPACITOR	CEASR22M50
	C513 CERAMIC CAPACITOR	CKDYF223Z50
	C514 CAPACITOR	CQSA471J50
	C515, 516 CERAMIC CAPACITOR	CKDYB222K50
	C530 CERAMIC CAPACITOR	CKDYF223Z50
	C601 CERAMIC CAPACITOR	CKDYF473Z50
	C602 ELECTR.CAPACITOR	CEAS332M35
	C603 ELECTR.CAPACITOR	CEAS470M10
	C604 ELECTR.CAPACITOR	CEAS470M16
	C605 CERAMIC CAPACITOR	CKDYF473Z50
	C606 ELECTR.CAPACITOR	CEAS470M10
⚠	C699 CAPACITOR	CQMXA104J100
	C702 ELECTR.CAPACITOR	CEAS4R7M50
	C704 CERAMIC CAPACITOR	CKDYF473Z50
	C705 ELECTR.CAPACITOR	ACH1023
	C706 CERAMIC CAPACITOR	CCMSL101J50
	C707 ELECTR.CAPACITOR	CEAS010M50
	C708 ELECTR.CAPACITOR	CEAS2R2M50
	C801 ELECTR.CAPACITOR	CEAS4R7M50
	C802 CERAMIC CAPACITOR	CKMYB681K50

Mark	Symbol & Description	Part No.
	RESISTORS	
	VR502 VR	VRTB6VS472
	R226 CARBONFILM RESISTOR	RD1/4PM561J
	R229 CARBONFILM RESISTOR	RD1/4PM331J
	R303 CARBONFILM RESISTOR	RD1/4PM562J
	R401 CARBONFILM RESISTOR	RD1/4PM681J
	R430−453 METALFILM RESISTER	RN1/4PC□□□□F
	R502 CARBONFILM RESISTOR	RD1/4PM273J
	R504−508 CARBONFILM RESISTOR	RD1/4PM□□□J
	R511, 512 CARBONFILM RESISTOR	RD1/4PM562J
	R523−526 CARBONFILM RESISTOR	RD1/4PM□□□J
	R601 FUSLIBLE RESISTOR	RFA1/4PS390J
	OTHER RESISTORS	RD1/8PM□□□J
	OTHERS	
	X201 CERAMIC RESONATOR	ATF1027
	X401 CRYSTAL RESONATOR	ASS1042
	X701 RESONATOR(4.19MHz)	ASS1018
	SCREW	ABA1012
	ANTENNA TERMINAL 2-P	AKA1011
	PIN JACK (2p)	AKB1039
	MINI JACK	AKN-207
	FRONT END ASSEMBLY	AWB1009

FRONT END ASS'Y (AWB1009)

Note; This Front End Assembly (AWB1009) is part of Main Assembly (AWZ2873).

Mark	Symbol & Description	Part No.
	SEMICONDUCTORS	
	Q901 MOS-FET	2SK241
	Q902 TRANSISTOR	2SC2668
	Q903, 904 MOS-FET	2SK241
	Q905 TRANSISTOR	2SC2786
	D901−904 VARI-CAP DIODE	1SV147-4
	COILS AND TRANSFORMERS	
	L901 COIL	ATC1001
	L902 COIL	ATC1010
	L903 COIL	ATC-247
	L904 COIL	ATC1003
	L905, 906 AXIAL INDUCTOR	LAU2R2M
	T901 COIL	ATC-194
	T902 FM TRANSFORMER	ATE-063
	CAPACITORS	
	TC901 CERAMIC TRIMMER	ACM-014
	C901 CERAMIC CAPACITOR	CCDRH100D50
	C902 CERAMIC CAPACITOR	CCDRH390J50
	C903 CERAMIC CAPACITOR	CKDYF103Z50
	C904 CERAMIC CAPACITOR	CCDRH390J50
	C905 CERAMIC CAPACITOR	CCDRH330J50
	C906 CERAMIC CAPACITOR	CCDRH390J50
	C907 CERAMIC CAPACITOR	CKDYF223Z50
	C908 CERAMIC CAPACITOR	CCDCH010C50
	C909, 910 CERAMIC CAPACITOR	CCDCH020C50
	C911 CERAMIC CAPACITOR	CCDSL101J50
	C912 CERAMIC CAPACITOR	CKDYF103Z50
	C913 CERAMIC CAPACITOR	CCDCH150J50
	C914 CERAMIC CAPACITOR	CCDCH330J50
	C915 CERAMIC CAPACITOR	CCDCH080D50
	C916 CERAMIC CAPACITOR	CCDTH180J50
	C917 CERAMIC CAPACITOR	CCDCH050C50
	C918, 919 CERAMIC CAPACITOR	CKDYF103Z50
	RESISTORS	
	ALL RESISTORS	RD1/8PM□□□J

6. ADJUSTMENTS

- For connections and points to be adjusted, refer to Fig. 6-1.
- Where an asterisk (*) is given for "level dBμ," set to the level (dBμ) at which the voltage is roughly half the voltage between TP5 and GND at 60dB.

6.1 FM TUNER SECTION ADJUSTMENT

- Set the FUNCTION selector to "FM".
- Set the "CCTS" and "SILENT SERVO" switches on the front panel to "OFF".
- Perform VCO adjustment two minutes or more after turning the power ON.

Step No.	Adjustment Title	FM SG (1kHz ±75kHz dev.)		Reception Frequency Display	Adjustment	
		Frequency (MHz)	Level (dBμ)		Adjustment Location	Specifications
1 *1	Adjustment to improve sensitivity	98.0	*	98.0MHz	T101, T102	Adjust so that the DC voltage between TP5 and GND is maximum.
2	Detector coil T-meter adjustment	98.0	60	98.0MHz	L302	Adjust so that the DC voltage between TP3 and TP4 is 0 V.
3	VCO adjustment	98.0 (No modulation)	80	98.0MHz	VR502	Adjust so that the frequency between TP6 and GND is 76 ±0.1 kHz.
4	MPX distortion adjustment	98.0 Stereo modulation (*3)	80	98.0MHz	T101	Minimize distortion in both left and right channel outputs (adjust T101 to with in ±90°).

*1 When adjusting the HEZ version FM Tuner in which the FE assembly (AWB1009) is used, the operation in step 2 differs from the above. For this operation, refer to Note *2.

* 3 Stereo modulation: Main 1 kHz L+R ±68.25 Hz dev.
Pilot 19 kHz ±6.75 kHz dev.

*2 Adjustment of the FM Tuner (HEZ type) using the FRONT END assembly (AWB1009) (for step 1 only)

Step No.		Adjustment Title	FM SG (1kHz ±75kHz dev.)		Reception Frequency Display	Adjustment	
			Frequency (MHz)	Level (dBμ)		Adjustment Location	Specifications
1	1	Adjustment to improve sensitivity (For AWB1009).	90.0	*	90.0MHz	L902, L903, T901	Adjust so that the DC voltage between TP5 and GND is maximum.
	2		106.0	*	106.0MHz	TC901, L903, T901	
	3		90.0	*	90.0MHz	L902	
	4	Perform the adjustments in steps 1-1 and 1-2 repeatedly until the specified values are obtained for both adjustments.					

6.2 AM (MW) Tuner Section Adjustment

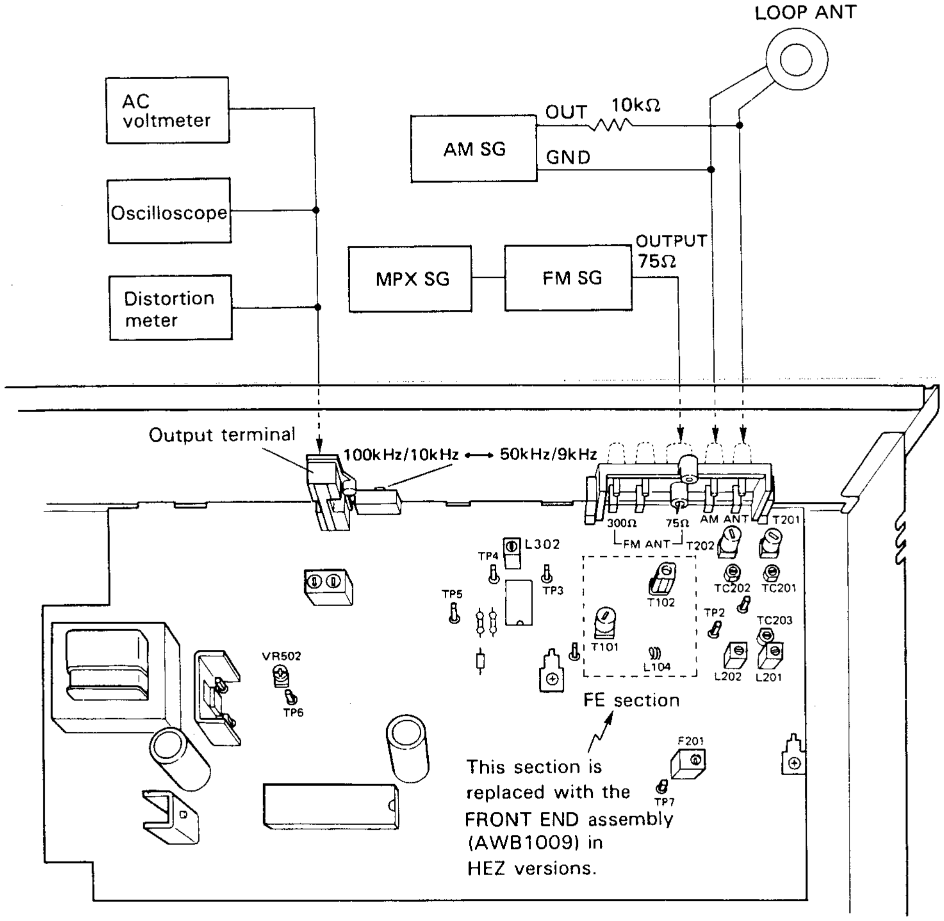
- Set the FUNCTION selector to "MW".
- Figures in parentheses ( ) are frequencies when the tuner is set to 10kHz steps.
- Set the "CCTS" and "AM SERVO" switches on the front panel to "OFF".

Step No.	Adjustment Title	AM (MW) SG (400Hz, 30% modulation)		Reception Frequency Display	Adjustment	
		Frequency (MHz)	Level (dBμ)		Adjustment Location	Specifications
1	AM (MW) local oscillator control voltage adjustment	No signal	—	531 kHz (530kHz)	L201	Adjust so that the DC voltage between TP2 and GND is 1.25 ±0.1 V.
2				1602 kHz (1700 kHz)	TC203	Adjust so that the DC voltage between TP2 and GND is 10.0 ±0.3 V.
3	Perform the adjustments in steps 1 and 2 repeatedly until the specified values are obtained for both.					
4	Adjustment to improve AM (MW) sensitivity	603 (600)	*	603 kHz (600 kHz)	T201	Adjust so that the DC voltage between TP7 and GND is maximum.
5		1395 (1400)	*	1395kHz (1400kHz)	TC201	
6	Perform the adjustments in steps 4 and 5 repeatedly until the specified values are obtained for both.					
7	AM ceramic filter adjustment (HIXIB only)	603	*	603kHz	F201	Adjust so that the DC voltage between TP7 and GND is maximum.

6.3 AM (LW) Tuner Section Adjustment (F447L only)

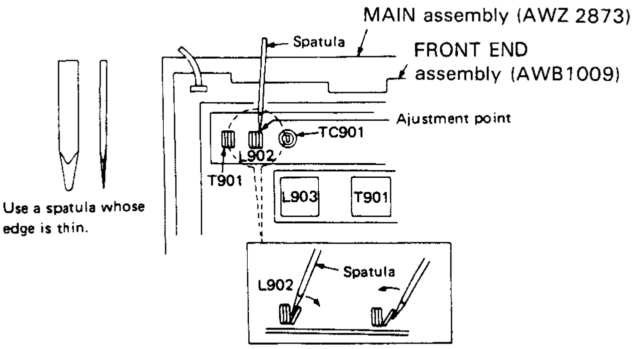
- Set the FUNCTION selector to "LW".
- Set the "CCTS" and "AM SERVO" switches on the front panel to "OFF".

Step No.	Adjustment Title	AM (LW) SG (400Hz, 30% modulation)		Reception Frequency Display	Adjustment	
		Frequency (MHz)	Level (dBμ)		Adjustment Location	Specifications
1	AM (LW) local oscillator control voltage adjustment	No signal	—	281kHz	L202	Adjust so that the DC voltage between TP2 and GND is 5.1 ±0.05 V.
2	Adjustment to improve AM (LW) sensitivity	164	*	164kHz	T202	Adjust so that the DC voltage between TP7 and GND is maximum.
3		254	*	254kHz	TC202	
4	Perform the adjustments in steps 2 and 3 repeatedly until the specified values are obtained for both.					


LOOP ANT
AC voltmeter
Oscilloscope
Distortion meter
AM SG
OUT
10kΩ
GND
MPX SG
FM SG
OUTPUT 75Ω
Output terminal
100kHz/10kHz ⟷ 50kHz/9kHz
300Ω
75Ω
AM ANT
FM ANT
T201
T202
L302
TP4
TP3
TP5
T102
TC202
TC201
TP2
TC203
T101
L104
L202
L201
VR502
TP6
FE section
F201
TP7

This section is replaced with the FRONT END assembly (AWB1009) in HEZ versions.

Fig. 6-1 Connection points and Adjustment points


MAIN assembly (AWZ 2873)
Spatula
FRONT END assembly (AWB1009)
Ajustment point
TC901
L902
T901
L903
T901
Use a spatula whose edge is thin.
L902
Spatula

To make the output maximum by opening and closing of the first right side turn of the coil.

Fig. 6-2 Adjustment tuning coil L902

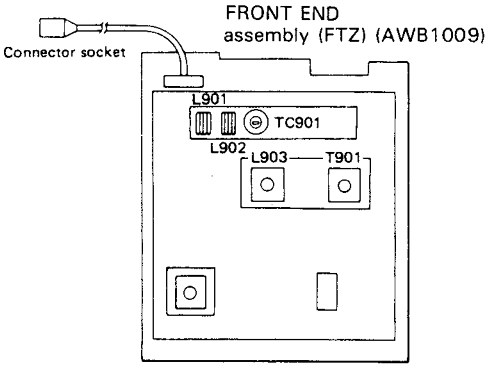

FRONT END assembly (FTZ) (AWB1009)
Connector socket
L901
TC901
L902
L903
T901

Fig. 6-3 Adjustment point of FRONT END Assembly

6. RÉGLAGE

- Les raccordements et les points de réglages sont représentés à la Fig. 6-1.
- Lorsqu'un astérisque accompagne un "niveau dBμ", régler à un niveau (dBμ) tel que la tension soit à peu près la moitié de celle qui est présente entre TP5 et GND pour 60 dB.

6.1 Réglage du syntoniseur FM

- Placer le sélecteur FUNCTION sur la positioon "FM".
- Placer les interrupteurs "CCTS" et "SILENT SERVO" (face avant) sur la position "OFF".
- Régler le VCO après deux minutes (ou plus) de mise sous tension.

Etape N°	Items de réglage	FM SG (1kHz ± 75 kHz dév.)		Affichage de fréquence de réception	Réglage	
		Fréquence (MHz)	Niveau (dBμ)		Lieu de réglage	Caractéristiques
1 *1	Réglage destiné à améliorer la sensibilité	98,0	*	98,0 MHz	T101, T102	Régler de manière que la tension continue entre TP5 et GND soit maximale.
2	Réglage de la bobine de détection	98,0	60	98,0 MHz	L302	Régler de manière que la tension continue entre TP3 et TP4 soit nulle.
3	Réglage du VCO	98,0 (sans modulation)	60	98,0 mHz	VR502	Régler de manière que la fréquence entre TP6 et GND soit égale à 76 kHz ± 0,1 kHz.
4	Réglage de distorsion MPX	98,0 Modulation stéréo (*3)	80	98,0MHz	T101	Réduire la distorsion dans les sorties des deux canaux droit et gauche (régler T101 à ±90°).

*1 Lorsque l'on procède au régalge de la version HEZ du syntoniseur FM pour laquelle le module FE (AWB1009) est utilisé, les opérations décrites en 2 diffèrent. Se reporter à la note *2.

*3 Modulation stéréo: Principal 1 kHz (G+ D) ±68,25 kHz
Pilote 19 kHz ±6,75 kHz

*2 Réglage du syntoniseur FM (version HEZ) pourvu du module FE (AWB1009) (opération 1 uniquement)

Etape N°		Items de réglage	FM SG (1kHz ± 75 kHz dév.)		Affichage de fréquence de réception	Réglage	
			Fréquence (MHz)	Niveau (dBμ)		Lieu de réglage	Caractéristiques
1	1	Réglage destiné à améliorer la sensibilité (pour AWB1009)	90,0	*	90,0 MHz	L902, L903, T901	Régler de manière que la tension continue entre TP5 et GND soit maximale.
	2		106,0	*	106,0 MHz	TC901, L903, T901	
	3		90,0	*	90,0 MHz	L902	
	4	Répéter les réglages des opérations 1-1 et 1-2 jusqu'à ce que les valeurs indiquées soient obtenues dans les deux cas.					

6.2 Réglage du syntoniseur AM (PO)

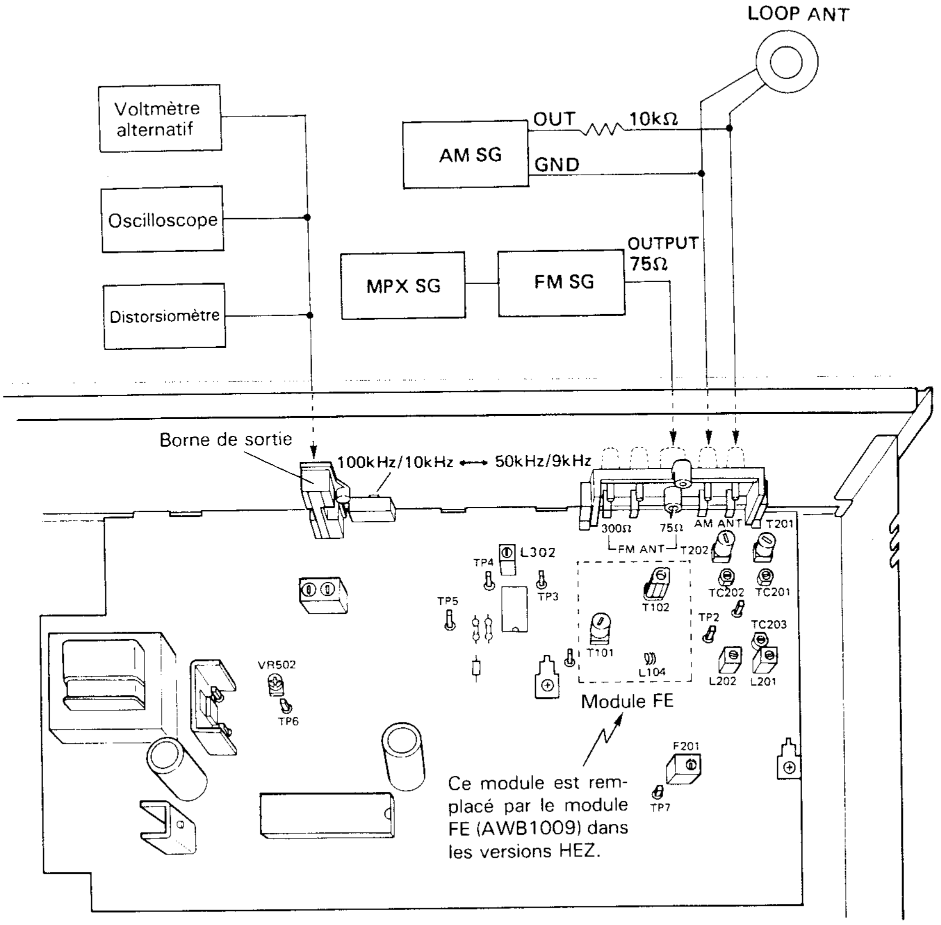
- Placer le sélecteur FUNCTION sur la position "MW".
- Les valeurs entre parenthèses ( ) représentent des fréquences lorsque le syntoniseur est réglé pour s'accorder par pas de 10 kHz.
- Placer les interrupteurs "CCTS" et "AM SERVO" (face avant) sur la position "OFF".

Etape N°	Items de réglage	AM (MW) SG (400 Hz, 30 % modulation)		F-443 & F-X44 · Affichage de fréquence de réception	Réglage	
		Fréquence (MHz)	Niveau (dBμ)		Lieu de réglage	Caractéristiques
1	Réglage de la tension de commande de l'oscillateur local AM (PO)	Aucun signal	—	531 kHz (530 kHz)	L201	Régler de manière que la tension continue entre TP2 et GND soit égale à 1,25 V ± 0,1 V.
2				1602 kHz (1700 kHz)	TC203	Régler de manière que la tension continue entre TP2 et GND soit égale à 10,0 V ± 0,3 V.
3	Répéter les réglages des opérations 1 et 2 jusqu'à ce que les valeurs indiquées soient obtenues dans les deux cas.					
4	Réglage destiné à améliorer la sensibilité AM (PO)	603 (600)	*	603 kHz (600 kHz)	T201	Régler de manière que la tension continue entre TP7 et GND soit maximale.
5		1395 (1400)	*	1395 kHz (1400 kHz)	TC201	
6	Répéter les réglages des opérations 4 et 5 jusqu'à ce que les valeurs indiquées soient obtenues dans les deux cas.					
7	Réglage de filtre de ceramic (HIX1B seulement)	603	*	603 kHz	F201	Régler afin que la DC tension entre PT7 et la masse soit maximale.

6.3 Réglage du syntoniseur AM (GO)

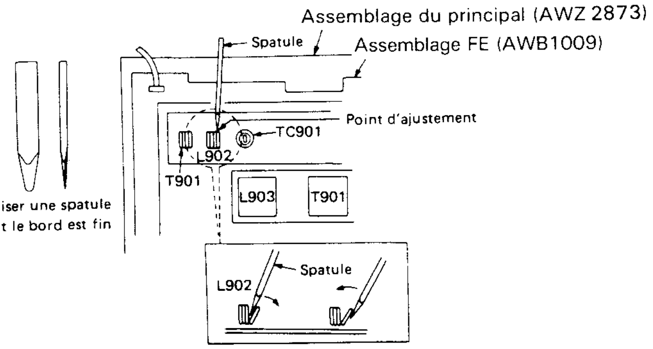
- Placer le sélecteur FUNCTION sur la position "LW".
- Placer les interrapteurs "CCTS" et "AM SERVO" (face avant) sur la position "OFF".

Etape N°	Items de réglage	AM (MW) SG (400 Hz, 30 % modulation)		Affichage de fréquence de réception	Réglage	
		Fréquence (MHz)	Niveau (dBμ)		Lieu de réglage	Caractéristiques
1	Réglage de la tension de commande de l'oscillateur local AM (GO)	Aucun signal	—	281 kHz	L202	Régler de manière que la tension continue entre TP2 et GND soit égale à 5,1 V ± 0,05 V.
2	Réglage destiné à améliorer la sensibilité AM (LW)	164	*	164 kHz	T202	Régler de manière que la tension continue entre TP7 et GND soit maximale.
3		254	*	254 kHz	TC202	
4	Répéter les réglages des opérations 2 et 3 jusqu'à ce que les valeurs indiquées soient obtenues dans les deux cas.					


LOOP ANT
Voltmètre alternatif
Oscilloscope
Distorsiomètre
AM SG
OUT
10kΩ
GND
MPX SG
FM SG
OUTPUT 75Ω
Borne de sortie
100kHz/10kHz ⟷ 50kHz/9kHz
300Ω
75Ω
FM ANT
AM ANT
T201
T202
TC202
TC201
TC203
TP2
L202
L201
T102
T101
L104
L302
TP4
TP3
TP5
VR502
TP6
F201
TP7
Module FE

Ce module est remplacé par le module FE (AWB1009) dans les versions HEZ.

Fig. 6-1 Points de raccordement et de réglage


Assemblage du principal (AWZ 2873)
Spatule
Assemblage FE (AWB1009)
Point d'ajustement
TC901
L902
T901
L903
T901
L902
Spatule

Utiliser une spatule dont le bord est fin

Pour obtenir une sortie maximum en ouvrant et fermant sur le premier réglage du côte droit de la bobine.

Fig. 6-2 Réglage du self d'accord L902

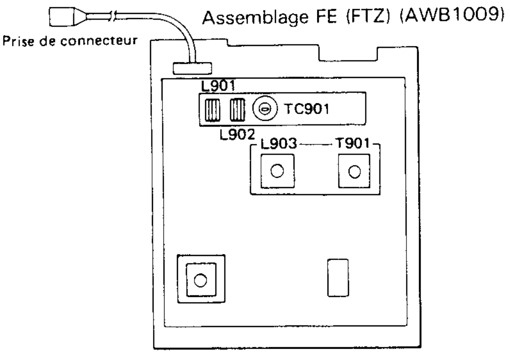

Prise de connecteur
Assemblage FE (FTZ) (AWB1009)
L901
TC901
L902
L903
T901

Fig. 6-3 Point d'ajustement du l'assemblage FE

6. AJUSTE

- Para las conexiones y puntos de ajuste, refiérase a la Fig. 6-1.
- Donde un asterisco (*) represente el "nivel dBμ", ajuste al nivel (dBμ) en el que la tensión sea aproximadamente la mitad de la tensión entre TP5 y GND a 60 dB.

6.1 Ajuste de la sección del sintonizador de FM

- Ajuste el selector FUNCTION a la posición "FM".
- Ajuste los interruptores "CCTS" y "SILENT SERVO" del panel frontal a la posición "OFF".
- Realice el ajuste VCO dos minutos o más después de conectar la alimentación.

N°. de paso	Items de ajuste	FM SG (1kHz ± 75 kHz dev.)		Frecuencímetro de de recepción	Ajuste	
		Frequencia (MHz)	Nivel (dBμ)		Lugar de ajuste	Especificaciones
1 *1	Ajuste para mejorar la sensibilidad	98,0	*	98,0 MHz	T101, T102	Ajuste de manera que la tensión de CC entre TP5 y GND sea la máxima.
2	Ajuste del medidor T de la bobina detectora	98,0	60	98,0 MHz	L302	Ajuste de manera que la tensión de CC entre TP3 y TP4 sea de 0V.
3	Ajuste VCO	98,0 (Sin modulación)	60	98,0 mHz	VR502	Ajuste de manera que la frequencia entre TP6 y GND sea de 76 ± 0,1 kHz.
4	Ajuste de la distorsión de MPX	98,0	80	98,0MHz	T101	Reduzca la distorsión tanto en la salida del canal izquierdo como en la del derecho (ajuste T101 a dentro de ±90°).
		Modulación estereo (*3)				

---

*1 Cuando ajuste un sintonizador de FM de la versión HEZ, en el que se utiliza el conjunto FE (AWB1009), el contenido del paso 2 difiere del anterior. Para esté paso, refiérase a la nota *2.

*3 Modulación estéreo: Principal 1 kHz (izq. + der.) ± 68,25 Hz (desv.)
Piloto 19±6,75 kHz (desv.)

*2 Ajuste del sintonizador de FM (versión HEZ) que utiliza un conjunto FE (AWB1009) (sólo para el paso 1)

N°. de paso		Items de ajuste	FM SG (1kHz ± 75 kHz dev.)		Frecuencímetro de de recepción	Ajuste	
			Frequencia (MHz)	Nivel (dBμ)		Lugar de ajuste	Especificaciones
1	1	Ajuste para mejorar la sensibilidad (Para AWB1009).	90,0	*	90,0 MHz	L902, L903, T901	Ajuste de manera que la tensión de CC entre TP5 y GND sea la máxima.
	2		106,0	*	106,0 MHz	TC901, L903, T901	
	3		90,0	*	90,0 MHz	L902	
	4	Realice repetidamente los ajustes de los pasos 1-1 y 1-2 hasta que se obtengan los valores especificados para ambos ajustes.					

6.2 Ajuste de la sección del sintonizador de AM (OM)

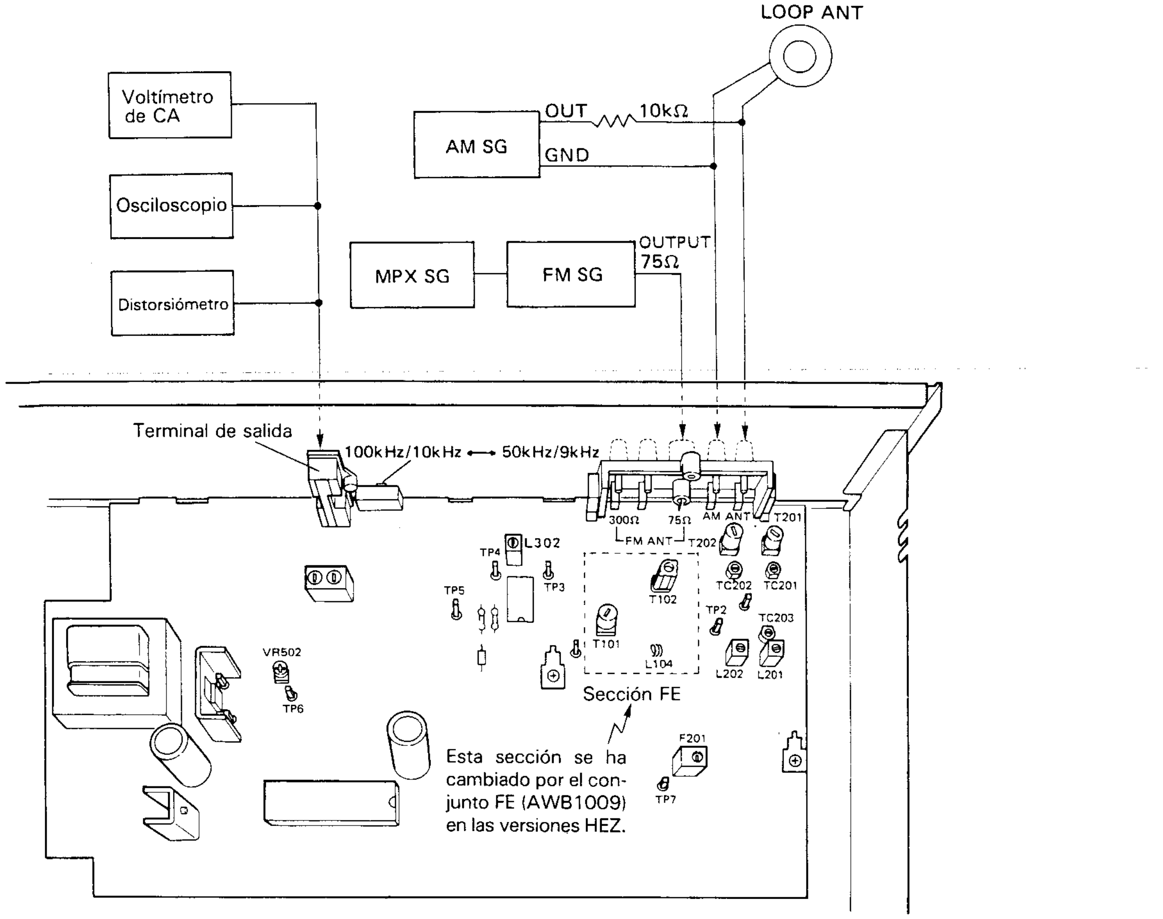
- Ajuste el selector FUNCTION a la posición "MW".
- Las figuras entre paréntesis ( ) son las frecuencias del sintonizador cuando está ajustado a saltos de 10kHz.
- Ajuste los interruptores "CCTS" y "AM SERVO" del panel frontal a la posición "OFF".

N°. de paso	Items de ajuste	AM (MW) SG (400 Hz, 30 % modulación)		Frecuencímetro de de recepción	Ajuste	
		Frequencia (MHz)	Nivel (dBμ)		Lugar de ajuste	Especificaciones
1	Ajuste de la tensión de control del oscilador local de AM (OM)	Ninguna señal	—	531 kHz (530 kHz)	L201	Ajuste de manera que la tensión de CC entre TP2 y GND sea de 1,25 ± 0,1 V.
2				1602 kHz (1700 kHz)	TC203	Ajuste de manera que la tensión de CC entre TP2 y GND sea de 10,0 ± 0,3 V.
3	Realice repetidamente los ajustes de los pasos 1 y 2 hasta que se obtengan los valores especificados para ambos ajustes.					
4	Ajuste para mejorar la sensibidad de AM (OM)	603 (600)	*	603 kHz (600 kHz)	T201	Ajuste de manera que la tensión de CC entre TP7 y GND sea la máxima.
5		1395 (1400)	*	1395 kHz (1400 kHz)	TC201	
6	Realice repetidamente los ajustes de los pasos 4 y 5 hasta que se obtengan los valores especificados para ambos ajustes.					
7	Ajuste del filtro cerámico de AM (sóloen el HIX1D)	603	*	603 kHz	F201	Ajuste de modo que la tensión de CC entre TP7 y masa sea máxima.

6.3 Ajuste de la sección del sintonizador de AM (OL)

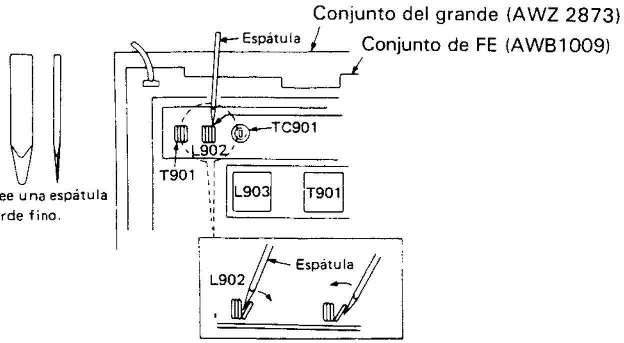
- Ajuste el selector FUNCTION a la posición "LW".
- Ajuste los interruptores "CCTS" y "AM SERVO" del panel frontal a la posición "OFF".

N°. de paso	Items de ajuste	AM (MW) SG (400 Hz, 30 % modulación)		Frecuencímetro de de recepción	Ajuste	
		Frequencia (MHz)	Nivel (dBμ)		Lugar de ajuste	Especificaciones
1	Ajuste de la tensión de control del oscilador local de AM (OL)	Ninguna señal	—	281 kHz	L202	Ajuste de manera que la tensión de CC entre TP2 y GND sea de 5,1 ± 0,05 V.
2	Ajuste para mejorar la sensibidad AM (OL)	164	*	164 kHz	T202	Ajuste de manera que la tensión de CC entre TP7 y GND sea la máxima.
3		254	*	254 kHz	TC202	
4	Realice repetidamente los ajustes de los pasos 2 y 3 hasta que se obtengan los valores especificados para ambos ajustes.					


LOOP ANT
Voltímetro de CA
Osciloscopio
Distorsiómetro
AM SG
OUT
10kΩ
GND
MPX SG
FM SG
OUTPUT 75Ω
Terminal de salida
100kHz/10kHz ⟷ 50kHz/9kHz
300Ω
75Ω
FM ANT
AM ANT
T201
T202
L302
TP4
TP3
TP5
TC202
TC201
T102
TP2
TC203
VR502
TP6
T101
L104
L202
L201
Sección FE
F201
TP7

Esta sección se ha cambiado por el conjunto FE (AWB1009) en las versiones HEZ.

Fig. 6-1 Puntos de conexión y puntos de ajuste


Conjunto del grande (AWZ 2873)
Espátula
Conjunto de FE (AWB1009)
TC901
L902
T901
L903
T901
L902
Espátula

Emplee una espátula de borde fino.

Para hacer que la salida sea máxima abriendo y cerrando la primera espira de la parte derecha de la bobina.

Fig. 6-2 Ajuste de la bobina de sintonía L902

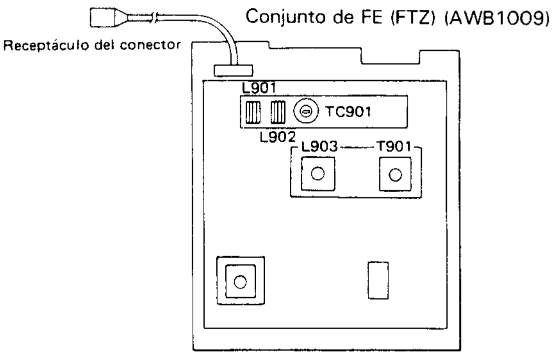

Conjunto de FE (FTZ) (AWB1009)
Receptáculo del conector
L901
TC901
L902
L903
T901

Fig. 6-3 Punto de ajuste del conjunto de FE

7. IC INFORMATION

PD5134

•Pin Function

No.	Pin Name	I/O	Function	Active
1	Vcc	–	+5 V power supply	
2	AVss	–	GND for A/D and D/A converters	
3	Vref	I	Reference voltage of A/D and D/A converters	
4	CCTS	O	VT adding voltage for CCTS	
5	AFC	O	AFC "ON": High; AFC "OFF" (SILENT': Low; PLL power supply "OFF"	L
6	6e	O	FL 6e	H
7	6d	O	FL 6d	H
8	6c	O	FL 6c	H
9	6b	O	FL 6b	H
10	S meter	I	Signal meter input	
11	MONO	O	FM MONO indicator and FM → MONO	H
12	STOP	I	FM AUTO STOP input	H
13	MUTE	O	MUTE output	H
14	6a	O	FL 6a	H
15	7g	O	FL 7g	H
16	7e	O	FL 7e	H
17	7d	O	FL 7d	H
18	7c	O	FL 7c	H
19	7b	O	FL 7b	H
20	7a	O	FL 7a	H
21	STATION	O	FL STATION	H
22	SIG.	O	FL SIG.	H
23	INT2	I	Wake up on POWER ON	↓
24	REM	I	Remote control input	SR
25	CCTS	O	FL CCTS	H
26	INT 1	I	Wake up on KEY IN, REM IN, and POWER OFF	↓
27	CNVss	–	Connected to VSS (0 V)	
28	$\overline{RST}$	I	RESET input (Boot on POWER ON)	↓
29	Xin	I	4.19 MHz ceramic resonator connection pin	
30	Xout	O		
31	Ø	O	Timing output (Not used)	
32	Vss	–	0V.	
33	COMP	I	Comparator input of successive approximation A/D converter for SILENT	L
34	K1	I	Key matrix input	L
35	K2			L
36	K3			L
37	K4			L
38	K5			L
39	K6			L
40	K7			L

No.	Pin Name	I/O	Function	Active
41	AM	O	FL AM	H
42	FM	O	FL FM	H
43	1g	O	FL 1g	H
44	1be	O	FL 1be	H
45	3g	O	FL 3g	H
46	3f	O	FL 3f	H
47	3e	O	FL 3e	H
48	3d	O	FL 3d	H
49	4b	O	FL 4b	H
50	4a	O	FL 4a	H
51	6g	O	FL 6g	H
52	6f	O	FL 6f	H
53	3c	O	FL 3c	H
54	3b	O	FL 3b	H
55	3a	O	FL 3a	H
56	5bc	O	FL 5bc	H
57	CE	O	Key strobe output, PD0012A CE output	L/L
58	CL	O	Key strobe output, PD0012A, LM7001 CL output	L/
59	DI	O	Key strobe output, PD0012A, LM7001 DATA output	L/
60	SELECT	O	Different version select output	L
61	CL	O	μPD4040BC CL output	↓
62	RST	O	μPD4040BC RST output	H
63	PLL CE	O	LM7001 CE output	H
64	AM SERVO, AFC SHORT	O	AM SERVO-ON output, AFC OFF	H/L

Pin No. / Type Symbol	40	39	38	37	36	35	34	Frequency Range
HE, HB, HEX1B	H	H	H	H	H	H	H	87.5 – 108.0 (FM) 531 – 1602 (MW) 153 – 281 (LW)
HEOZ, HIX1B	H	H	H	L	H	H	H	87.5 – 108.0 (FM) 531 – 1602 (MW) Without LW
KUC	L	L	H	L	H	H	H	87.5 – 108.0 (FM) 530 – 1700 (MW)
J	L	H	L	L	H	H	H	76.0 – 90.0 (FM) 522 – 1629 (MW)
SD	H	L/H	H	L		H	H	87.5 – 108.0 (FM) 530 – 1700 531 – 1602 (MW)

8. F-447-S/HEWZ, F-447L/HE AND HB TYPES

8.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

F-447-S/HEWZ, F-447L/HE and HB types are the same as the F-447/HEWZ type with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		F-447/HEWZ	F-447-S/HEWZ	F-447L/HE	F-447L/HB	
	Main assembly	AWZ2873	AWZ2874	AWZ2874	AWZ2874	
⚠	AC power cord	ADG1010	ADG1010	ADG1021	ADG-063	
⚠	FU301 Fuse (400mA)	AEK-407	AEK-407	AEK-407	AEK-504	
	Panel base assembly	AMD1035	AMD1037	AMD1035	AMD1035	
	Bonnet	AZN1745	AZN1803	AZN1744	AZN1744	
	Power button	AAD1535	AAD1537	AAD1535	AAD1535	
	Front panel assembly	ANB1390	ANB1402	ANB1389	ANB1389	
	Screw	BBT30P080FZK	—	—	—	
	GND screw	ABA1047	ABA1047	—	—	
	Packing case	AHD1836	AHD1856	AHD1837	AHD1837	
	Screw	—	ABA-274	—	—	
	FM anntena assembly	ADH1002	ADH1002	—	—	
	FM anntena	—	—	ADH1004	ADH1004	
	Operating instructions (German)	ARC1188	ARC1188	—	—	
	Operating instructions (English)	—	—	—	ARB1232	
	Operating instructions (English/French/German /Italian/Dutch/Swedish /Spanish/Portuguese)	—	—	ARE1151	—	

8.2 MAIN ASSEMBLY(AWZ2874)

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of indetical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%)

560Ω 56 × 10^1 561..................................RD1/4PS $\boxed{5}\boxed{6}\boxed{1}$ J
47kΩ 47 × 10^3 473..................................RD1/4PS $\boxed{4}\boxed{7}\boxed{3}$ J
0.5Ω 0R5..RN2H $\boxed{0}\boxed{R}\boxed{5}$ K
1Ω 010..RS1P $\boxed{0}\boxed{1}\boxed{0}$ K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10^1 5621................................RN1/4SR $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ F

MAIN ASSEMBLY (AWZ2874)

Mark	Symbol & Description	Part No.
	SEMICONDUCTORS	
	IC201 AM IC	LA1247
	IC301 FM IC	HA11225
	IC401 PLL IC	LM7001
	IC402 LOGIC IC	UPD4040BC
	IC403, 404 OP-AMP IC	M5223P
	IC405 LOGIC IC	UPD4066BC
	IC501 MPX IC	AN7470P
	IC601 REGURATOR IC	NJM78M13A
	IC701 TUNER CONTROL	PD5134
	Q101 MOS-FET	2SK241
	Q102 TRANSISTOR	2SC2786
	Q103, 104 TRANSISTOR	2SC2668
	Q105 N-FET	2SK161
	Q201, 202 TRANSISTOR	2SC2878
	Q203−205 TRANSISTOR	2SC1740S
	Q301−303 TRANSISTOR	DTC124ES
	Q401−404 TRANSISTOR	DTA143ES
	Q405 N-FET	2SK246
	Q406 TRANSISTOR	2SC1740SLN
	Q407 N-FET	2SK246
	Q408 TRANSISTOR	DTC124ES
	Q410 TRANSISTOR	DTC124ES
	Q411, 412 TRANSISTOR	2SC1740S
	Q413 TRANSISTOR	2SA933S
	Q414 TRANSISTOR	2SC1740S
	Q501 TRANSISTOR	2SC1740S
	Q502 TRANSISTOR	DTC124ES
	Q503, 504 TRANSISTOR	2SC1740S
	Q506 TRANSISTOR	2SA933S
	Q601 TRANSISTOR	2SD880
	Q701 TRANSISTOR	DTC124ES
	Q702 TRANSISTOR	2SA933S
	Q703 TRANSISTOR	2SC1740S
	Q704, 705 TRANSISTOR	DTC124ES
	Q706, 707 TRANSISTOR	2SC1740S
	D101, 102 VARI-CAP DIODE	ITT310
	D199 DIODE	1SS252
	D201−203 VARI-CAP DIODE	SVC321C3
	D204, 205 DIODE	1SS85
	D206, 207 DIODE	1SS252
	D301−303 DIODE	1SS252
	D401, 402 DIODE	1SS252
	D403 ZENER DIODE	RD5.1ESB2
	D406, 407 DIODE	1SS252
	D501−507 DIODE	1SS252
⚠	D601−604 DIODE	S5566
	D605 ZENER DIODE	RD6.2ESB2
	D701, 702 DIODE	1SS252
	D704−709 DIODE	1SS252
	D720−726 DIODE	1SS252
	D740 DIODE	1SS252
	D741 ZENER DIODE	RD12ESB1
	COILS, TRANSFORMERS AND FILTERS	
	L103 AXIAL INDUCTOR	LAU2R2M
	L104 COIL	ATC1003
	L201 COIL	ATB-100
	L202 COIL	ATD-023
	L301 AXIAL INDUCTOR	LAU2R2M
	L302 COIL	ATE-074
	L402 AXIAL INDUCTOR	LAU2R2M
	L701 AXIAL INDUCTOR	LAU220K
	T101 FM TRANSFORMER	ATE-063
	T102 COIL	ATC-194
	T201 COIL	ATB-095
	T202 RF TRANSFORMER	ATD1002

Mark	Symbol & Description	Part No.
⚠	T601 POWER TRANSFORMER	ATT1065
	F101 CERAMIC FILTER	ATF-155
	F102 CERAMIC FILTER	ATF-119
	F103 CERAMIC FILTER	ATF-107
	F201 CERAMIC FILTER	ATF1042

CAPACITORS

Mark	Symbol & Description	Part No.
	TC201 CERAMIC TRIMMER	ACM-015
	TC202 CERAMIC TRIMMER	ACM-020
	TC203 CERAMIC TRIMMER	ACM-015
	C101 CERAMIC CAPACITOR	CCMCH040C50
	C102 CERAMIC CAPACITOR	CKDYF103Z50
	C103 CERAMIC CAPACITOR	CCDRH180J50
	C104 CERAMIC CAPACITOR	CKDYF103Z50
	C105 CERAMIC CAPACITOR	CCDCH020C50
	C106 CERAMIC CAPACITOR	CCDCH010C50
	C107 CERAMIC CAPACITOR	CCMSL101J50
	C108, 109 CERAMIC CAPACITOR	CKDYF103Z50
	C120 CERAMIC CAPACITOR	CKDYF103Z50
	C121 CERAMIC CAPACITOR	CCMCH150J50
	C122 CERAMIC CAPACITOR	CKDYF103Z50
	C123 CERAMIC CAPACITOR	CCMCH330J50
	C124 CERAMIC CAPACITOR	CCMCH080D50
	C125 CERAMIC CAPACITOR	CCDTH150J50
	C126 CERAMIC CAPACITOR	CCMCH150J50
	C127 ELECTR.CAPACITOR	CEAS470M16
	C128 CERAMIC CAPACITOR	CKMYB102K50
	C201 CERAMIC CAPACITOR	CKDYF103Z50
	C202, 203 CERAMIC CAPACITOR	CKDYF223Z50
	C210 CAPACITOR	CQSA431J50
	C211 CERAMIC CAPACITOR	CCMCH070D50
	C212 CERAMIC CAPACITOR	CKDYF223Z50
	C213 CERAMIC CAPACITOR	CCDCH560J50
	C214 CAPACITOR	CQSA301J50
	C215 ELECTR.CAPACITOR	CEAS470M16
	C220 CERAMIC CAPACITOR	CKDYF103Z50
	C221 CERAMIC CAPACITOR	CCMCH470J50
	C222, 223 ELECTR.CAPACITOR	CEAS4R7M50
	C224 CERAMIC CAPACITOR	CKDYF103Z50
	C225 CERAMIC CAPACITOR	CKDYX473M25
	C226 ELECTR.CAPACITOR	CEAS470M16
	C227 CERAMIC CAPACITOR	CKDYF223Z50
	C228 CERAMIC CAPACITOR	CKMYF102Z50
	C229 CERAMIC CAPACITOR	CKMYB102K50
	C230 CERAMIC CAPACITOR	CKDYF473Z50
	C231 ELECTR.CAPACITOR	CEAS470M16
	C232 CERAMIC CAPACITOR	CKDYF103Z50
	C233 CERAMIC CAPACITOR	CKDYX153M25
	C234 CERAMIC CAPACITOR	CKDYX104M25
	C235 ELECTR.CAPACITOR	CEAS4R7M50
	C236 ELECTR.CAPACITOR	CEAS221M10
	C237 CERAMIC CAPACITOR	CKDYB103K50
	C301, 302 CERAMIC CAPACITOR	CKDYF223Z50
	C303 CERAMIC CAPACITOR	CCDSL221J50
	C304 ELECTR.CAPACITOR	CEAS010M50
	C305−308 CERAMIC CAPACITOR	CKDYF223Z50
	C309 ELECTR.CAPACITOR	CEAS4R7M50
	C310 ELECTR.CAPACITOR	CEAS010M50
	C311 ELECTR.CAPACITOR	CEAS470M16
	C312 CERAMIC CAPACITOR	CKDYF223Z50
	C313 ELECTR.CAPACITOR	CEAS470M16
	C401 ELECTR.CAPACITOR	CEAS010M50
	C402 ELECTR.CAPACITOR	CEAS470M16
	C403, 404 CERAMIC CAPACITOR	CCMCH150J50
	C405 CERAMIC CAPACITOR	CKDYF103Z50
	C406 ELECTR.CAPACITOR	CEAS470M16
	C407 CERAMIC CAPACITOR	CKDYB103K50
	C408 AUDIO FILM CAPACITOR	CFTXA224J50
	C409 CERAMIC CAPACITOR	CKDYF223Z50
	C410 ELECTR.CAPACITOR	CEAS470M16
	C412 ELECTR.CAPACITOR	CEAS010M50
	C413 CERAMIC CAPACITOR	CKDYF103Z50
	C414 CERAMIC CAPACITOR	CKDYX473M25
	C415, 416 ELECTR.CAPACITOR	CEAS470M10
	C417 ELECTR.CAPACITOR	CEAS470M16
	C418 ELECTR.CAPACITOR	CEAS010M50
	C419 ELECTR.CAPACITOR	CEAS471M16
	C420 CERAMIC CAPACITOR	CKDYF473Z50
	C430 ELECTR.CAPACITOR	CEAS470M16
	C501 ELECTR.CAPACITOR	CEAS4R7M50
	C502 CERAMIC CAPACITOR	CKDYF473Z50
	C503 ELECTR.CAPACITOR	CEAS470M16
	C504 ELECTR.CAPACITOR	CEAS101M16
	C505 ELECTR.CAPACITOR	CEAS470M16
	C506, 507 CERAMIC CAPACITOR	CKMYB102K50
	C508−510 ELECTR.CAPACITOR	CEAS4R7M50
	C511 ELECTR.CAPACITOR	CEAS1R5M50
	C512 ELECTR.CAPACITOR	CEASR22M50
	C513 CERAMIC CAPACITOR	CKDYF223Z50
	C514 CAPACITOR	CQSA471J50
	C515, 516 CERAMIC CAPACITOR	CKDYB222K50
	C601 CERAMIC CAPACITOR	CKDYF473Z50
	C602 ELECTR.CAPACITOR	CEAS332M35
	C603 ELECTR.CAPACITOR	CEAS470M10
	C604 ELECTR.CAPACITOR	CEAS470M16
	C605 CERAMIC CAPACITOR	CKDYF473Z50
	C606 ELECTR.CAPACITOR	CEAS470M10
	C702 ELECTR.CAPACITOR	CEAS4R7M50
	C704 CERAMIC CAPACITOR	CKDYF473Z50
	C705 ELECTR.CAPACITOR	ACH1023
	C706 CERAMIC CAPACITOR	CCMSL101J50
	C707 ELECTR.CAPACITOR	CEAS010M50
	C708 ELECTR.CAPACITOR	CEAS2R2M50

RESISTORS

Mark	Symbol & Description	Part No.
	VR502 VR	VRTB6VS472
	R126 CARBONFILM RESISTOR	RD1/4PM151J
	R226 CARBONFILM RESISTOR	RD1/4PM151J

Mark	Symbol & Description	Part No.
	R229 CARBONFILM RESISTOR	RD1/4PM331J
	R303 CARBONFILM RESISTOR	RD1/4PM562J
	R401 CARBONFILM RESISTOR	RD1/4PM681J
	R430−453 METALFILM RESISTER	RN1/4PC□□□□F
	R502 CARBONFILM RESISTOR	RD1/4PM273J
	R504−508 CARBONFILM RESISTOR	RD1/4PM□□□J
	R511, 512 CARBONFILM RESISTOR	RD1/4PM103J
	R523−526 CARBONFILM RESISTOR	RD1/4PM□□□J
	R601 FUSLIBLE RESISTOR	RFA1/4PS390J
	OTHER RESISTORS	RD1/8PM□□□J
OTHERS		
	X201 CERAMIC RESONATOR	ATF1027
	X401 CRYSTAL RESONATOR	ASS1042
	X701 RESONATOR(4.19MHz)	ASS1018
	SCREW	ABA1012
	ANTENNA TERMINAL 4-P	AKA1010
	PIN JACK (2p)	AKB1039
	MINI JACK	AKN-207

9. SPECIFICATIONS

[F-447]

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	12.7 dBf (1.2 μV/75 Ω)
50 dB Quieting Sensitivity	STEREO: 36.2 dBf (17.7 μV/75 Ω) MONO: 18 dBf (2.2 μV/75 Ω)
Sensitivity (DIN)	S/N 26 dB Mono : 0.9 μV/75 Ω S/N 46 dB Stereo : 50 μV/75 Ω
Signal-to-Noise Ratio (SILENT SERVO ON)	Mono: 80 dB (at 80 dBf) Stereo: 78 dB (at 80 dBf)
Signal-to-Noise Ratio(DIN)	Mono: 66 dB Stereo: 60 dB
Distortion	Stereo; 0.4% (1 kHz)
Alternate Channel Selectivity	65 dB (400 kHz)
Stereo Separation	45 dB (1 kHz)
Frequency Response	30 Hz to 15 kHz ± 1 dB
Antenna Input	300 Ω balanced 75 Ω unbalanced

AM Tuner Section

Frequency range	
When 10 kHz step	530 kHz to 1,700 kHz
When 9 kHz step	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna)	300 μV/m
Sensitivity	20 dB
Signal-to-Noise Radio	50 dB
Antenna	Loop Antenna

Audio Section

Output	
FM (100% MOD)	650 mV/5.1 kΩ
AM (30% MOD)	150 mV/5.1 kΩ

Miscellaneous

Power requirements	
U.S. and Canadian models	AC120V,60Hz
Australian model	a.c. 240 Volts ~, 50 Hz
Other destination model	AC110V/120-127V/ 220V/240V(switchable), 50/60Hz
Power Consumption	10W
Dimensions	420 (W) x 85.5 (H) x 318 (D) mm 16-9/16 (W) x 3-3/8 (H) x 12-1/2 (D) in
Weight (without package)	3.5 kg (7 lb 12 oz)

Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Audio connecting cord	1
Operating instructions	1
Control cord	1

NOTE:

- *Specifications and design subject to possible modification without notice due to improvements.*

[F-447L]

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	12.7 dBf (1.2 μV/75 Ω)
50 dB Quieting Sensitivity	STEREO: 36.2 dBf (17.7 μV/75 Ω) MONO: 18 dBf (2.2 μV/75 Ω)
Sensitivity (DIN)	S/N 26 dB Mono ; 0.9 μV/75 Ω S/N 46 dB Stereo ; 50 μV/75 Ω
Signal-to-Noise Ratio (SILENT SERVO ON)	Mono: 80 dB (at 80 dBf) Stereo: 78 dB (at 80 dBf)
Signal-to-Noise Ratio(DIN)	Mono: 66 dB Stereo: 60 dB
Distortion	Stereo ; 0.4% (1 kHz)
Alternate Channel Selectivity	65 dB (400 kHz)
Stereo Separation	45 dB (1 kHz)
Frequency Response	30 Hz to 15 kHz ± 1 dB
Antenna Input	300 Ω balanced 75 Ω unbalanced

AM (MW) Tuner Section

Frequency range	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna)	300 μV/m
Sensitivity	20 dB
Signal-to-Noise Radio	50 dB
Antenna	Loop Antenna

LW Tuner Section

Frequency range	153 kHz to 281 kHz
Sensitivity (IHF, Loop antenna)	1,000 μV/m
Antenna	Loop Antenna

Audio Section

Output	
FM (100% MOD)	650 mV/5.1 kΩ
AM (30% MOD)	150 mV/5.1 kΩ

Miscellaneous

Power requirements	
U.K.model	a.c.240 Volts ~ ,50 Hz
Power Consumption	10W
Dimensions	420 (W) x 85.5 (H) x 318 (D) mm
Weight (without package)	3.5 kg

Furnished Parts

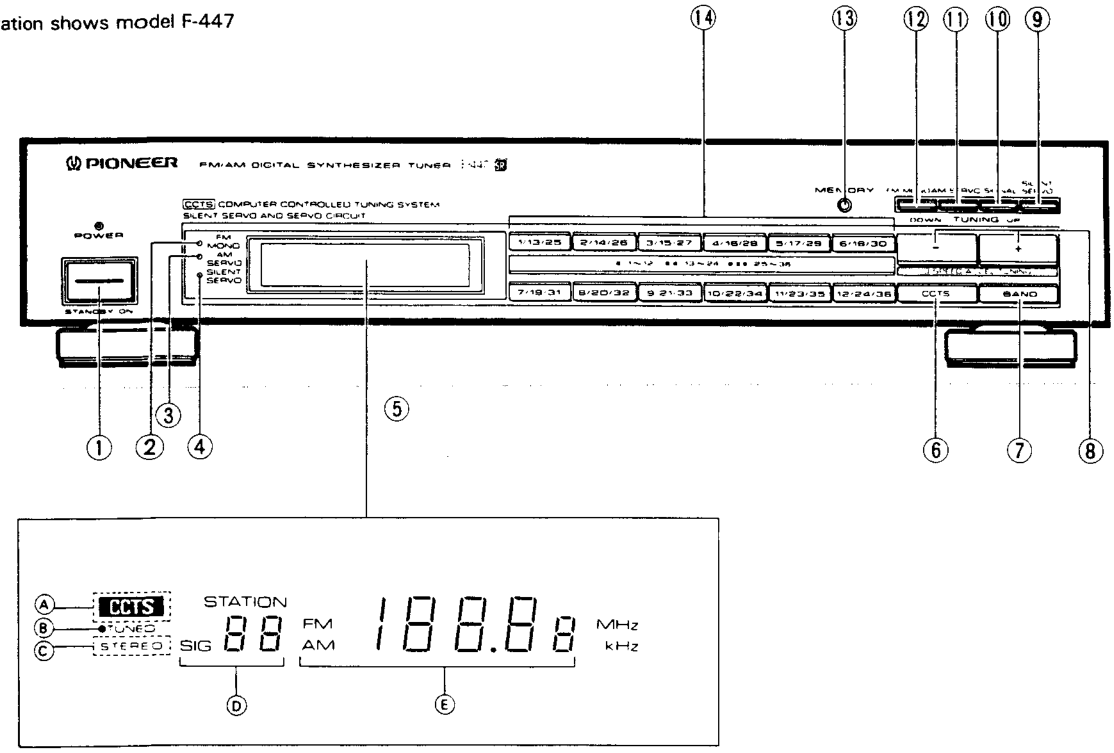
FM T-type Antenna	1
AM Loop Antenna	1
Audio connecting cord	1
Operating instructions	1
Control cord	1

NOTE:

- *Specifications and design subject to possible modification without notice due to improvements.*

10. PANEL FACILITIES

- Illustration shows model F-447



⑭
⑬
⑫
⑪
⑩
⑨
PIONEER FM/AM DIGITAL SYNTHESIZER TUNER
CCTS COMPUTER CONTROLLED TUNING SYSTEM
SILENT SERVO AND SERVO CIRCUIT
POWER
STANDBY ON
FM MONO
AM SERVO
SILENT SERVO
MEMORY
DOWN TUNING UP
CCTS
BAND
①
②
③
④
⑤
⑥
⑦
⑧
Ⓐ
Ⓑ
Ⓒ
CCTS
TUNED
STEREO
STATION
SIG
88
FM
AM
188.88
MHz
kHz
Ⓓ
Ⓔ

① POWER (STANDBY/ON) switch

ON.................	When set to ON position, power is supplied and the unit becomes operational.
STANDBY	When set to STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness. Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

NOTE:
- *The memory will be backed up so long as the power cord is not unplugged.*
- *If the power cord is unplugged, the memory will be retained for several days.*

② FM MONO indicator (During FM reception)

This lights when FM MONO switch is turned on.

③ AM SERVO indicator (During AM reception)

This lights when AM SERVO switch is turned on.

④ SILENT SERVO indicator (During FM reception)

This lights when SILENT SERVO switch is turned on.

⑤ DISPLAY SECTION

Ⓐ CCTS indicator

This lights when CCTS switch is turned on.

Ⓑ TUNED indicator

This lights to confirm fine tuning.

Ⓒ STEREO indicator (FM)

This lights to confirm reception of an FM stereo broadcast.

Ⓓ STATION/SIGNAL display

Shows memorized station number (1-36). Shows signal strength (0-9) when SIGNAL switch is pressed.

Ⓔ Frequency display

⑥ CCTS switch (Computer controlled tuning system)

When this switch is set to ON (CCTS indicator lights), the unit's built-in microcomputer automatically performs the optimum tuning for the station received.

⑦ BAND switch

[For model F-447]

Each time this switch is pressed, FM or AM reception is selected alternately.

[For model F-447L]

Each time this switch is pressrd, FM,MW or LW reception is selected in order.

FM and MHz light: FM reception.

AM and kHz light: MW or LW (F-447L) reception.

⑧ TUNING switches (DOWN–, UP +)

These are used to locate stations. Push "DOWN –"switch to locate a station broadcasting on a lower frequency and "UP+" switch to locate a station broadcasting on a higher frequency.

⑨ SILENT SERVO switch (Operates only during FM reception.)

When this switch is on (as confirmed by SILENT SERVO indicator), SILENT SERVO circuit operates after tuning has been completed, cutting out spurious high frequency clock signal harmonics in order to minimize intermodulation (beat) distortion, improve the signal-to-noise ratio, and elevate sound quality.

⑩ SIGNAL switch

When this switch is pressed, the operation display will show a digital number "0" – "9". The size of the number corresponds to the strength of the reception signal, "9" representing the strongest, and "0" when there is no signal. In this way, this function can be used when installing an antenna to allow orientation of the antenna for optimum reception.

⑪ AM SERVO switch

When this switch is on (as confirmed by AM SERVO indicator), AM SERVO circuit operates to minimize distortion on the AM (MW or LW) band.

⑫ FM MONO switch

Normally, when receiving an FM stereo broadcast, leave this switch OFF. If the broadcast station is distant, or if you are in a poor reception area, the input signals will be weak, and during stereo reception, noise will be weak, and during stereo reception, noise will be prominent, making the broadcast difficult to hear. In such a case, press ON this switch. The broadcast will be reproduced in monaural, however noise will be reduced, enabling the broadcast to be heard more clearly.

NOTE:

- *This switch does not function when you are listening to an AM (MW or LW) broadcast.*
- *The ON or OFF status of FM MONO switch will be memorized when you memorize a station in STATION CALL switch. By using MEMORIZING FM AND AM (MW or LW) STATIONS function, you can receive an FM broadcast at any time in the same mode.*

⑬ MEMORY switch

This is used to memorize stations.

⑭ STATION CALL switches

These are used to memorize and recall broadcasting stations.

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PIONEER
The future of sound and vision.

Service Manual

ORDER NO.
ARP2026

FM/AM DIGITAL SYNTHESISER TUNER

F-447 HIX1B

F-447L HEWX1B

- **Refer to the service manual ARP1997, F-447/HEWZ.**
- **This manual is applicable to the F-447/HIX1B and F-447L/HEWX1B types.**

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1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

F-447/HIX1B and F-447L/HEWX1B types are the same as the F-447/HEWZ type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		F-447/HEWZ	F-447/HIX1B	F-447L/HEWX1B	
	Main assembly	AWZ2873	AWZ2879	AWZ2878	
	FE assembly	AWB1009	AWB1008	. . .	
⚠	AC power cord	ADG1010	ADG1010	ADG-056	
	Bonnet	AZN1745	ANE1140	ANE1139	
	Strain relief	. . .	. . .	AEC-882	
	Front panel assembly	ANB1390	ANB1390	ANB1389	
	Screw	BBT30P080FZK	BBT30P080FZK	. . .	
	GND screw	ABA1047	ABA1047	. . .	
	Packing case	AHD1836	AHD1858	AHD1857	
	Front rear pad	AHA1095	AHA1200	AHA1200	
	FM antenna assembly	ADH1002	ADH1002	. . .	
	FM antenna	. . .	. . .	ADH-005	
	Packing sheet	AHG1017	Non supply	Non supply	
	Operating instructions (German)	ARC1188	. . .	. . .	
	Operating instructions(Italian)	. . .	ARC1218	. . .	
	Operating instructions (French/Spanish)	. . .	. . .	ARC1217	

Main Assembly (AWZ2879)
The Main assembly (AWZ2879) is the same as the Main assembly (AWZ2873) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		AWZ2873	AWZ2879	
	Q203–Q205, Q411, Q412, Q414, Q501, Q503, Q504, Q703, Q706, Q707	2SC1740S	JC501	
	Q413, Q506, Q702	2SA933S	JA101	
	D301–D303, D407, D501–D507, D701, D702, D704–D709, D720–D726, D740	1SS252	1N4531	
	C699	CQMXA104J100	. . .	
	R511, R512	RD1/4PM562J	RD1/4PM103J	
	R523, R524	RD1/4PM223J	RD1/4PM103J	
	FE assembly	AWB1009	AWB1008	*1

***1; FE Assembly (AWB1008)**

There is no difference between the FE assembly (AWB1008) and FE assembly (AWB1009) as far as the schematic diagram, the P.C. board patterns and the electrical parts list are concerned.

Front Panel Assembly (AWZ1823)

The Front panel assembly (F-447/HEWZ) is the same as the (F-447L/HEWX1B) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		F-447/HEWZ	F-447L/HEWX1B	
	D731 – D733	1SS252	1N4531	

2. F-447L/HEWZ1B TYPE

2.1 P.C.B'S PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of indetical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%)*

560Ω 56×10^1 *561................................RD1/4PS* $\boxed{5}\boxed{6}\boxed{1}$ *J*
47kΩ 47×10^3 *473................................RD1/4PS* $\boxed{4}\boxed{7}\boxed{3}$ *J*
0.5Ω *0R5..RN2H* $\boxed{0}\boxed{R}\boxed{5}$ *K*
1Ω *010..RS1P* $\boxed{0}\boxed{1}\boxed{0}$ *K*

Ex.2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ 562×10^1 *5621..............................RN1/4SR* $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ *F*

FRONT PANEL ASS'Y (AWZ1823)

Mark	Symbol & Description	Part No.
	SEMICONDUCTORS	
	IC702 OUTPUT EXPANDER IC	PD0012A
	D731–733 DIODE	1N4531
	SWITCHES	
	S701–707 TACT SWITCH	ASG-703
	S711–717 TACT SWITCH	ASG-703
	S721–727 TACT SWITCH	ASG-703
	RESISTORS	
	R760–771 CARBONFILM RESISTOR	RD1/8PM333J
	OTHER	
	V701 FL TUBE	AAV1031

POWER IND. ASSEMBLY

Mark	Symbol & Description	Part No.
	SEMICONDUCTOR	
	D804 LED ASSY	AEL1004

LED ASSY

Mark	Symbol & Description	Part No.
	SEMICONDUCTORS	
	D801 LED ASSY	AEL1004
	D802, 803 LED ASSY	AEL1015
	RESISTOR	
	R462 CARBONFILM RESISTOR	RD1/8PM681J

POWER SW ASSEMBLY

Mark	Symbol & Description	Part No.
	SWITCH	
⚠	S601 PUSH SWITCH	ASG-413

Note:
As to schematic diagrams and P.C. boards of Front panel Assembly (AWZ1823), Power IND. Assembly, LED Assembly and Power SW Assembly, refer to F-447/HEWZ service manual (ARP1997).

MAIN ASSEMBY (AWZ2878)

Mark	Symbol & Description	Part No.
	SEMICONDUCTORS	
	IC201 AM IC	LA1247
	IC301 FM IC	HA11225
	IC401 PLL IC	LM7001
	IC402 LOGIC IC	UPD4040BC
	IC403, 404 OP-AMP IC	M5223P
	IC405 LOGIC IC	UPD4066BC
	IC501 MPX IC	AN7470P
	IC601 REGURATOR IC	NJM78M13A
	IC701 SYSTEM CONTROL MICON	PD5134
	Q101 MOS-FET	2SK241
	Q102 TRANSISTOR	2SC2786
	Q103, 104 TRANSISTOR	2SC2668
	Q105 N-FET	2SK161
	Q201, 202 TRANSISTOR	2SC2878

Mark	Symbol & Description	Part No.
	Q203–205 TRANSISTOR	JC501
	Q301–303 TRANSISTOR	DTC124ES
	Q401–404 TRANSISTOR	DTA143ES
	Q405 N-FET	2SK246
	Q406 TRANSISTOR	2SC1740SLN
	Q407 N-FET	2SK246
	Q408 TRANSISTOR	DTC124ES
	Q410 TRANSISTOR	DTC124ES
	Q411, 412 TRANSISTOR	JC501
	Q413 TRANSISTOR	JA101
	Q414 TRANSISTOR	JC501
	Q501 TRANSISTOR	JC501
	Q502 TRANSISTOR	DTC124ES
	Q503, 504 TRANSISTOR	JC501
	Q506 TRANSISTOR	JA101
	Q601 TRANSISTOR	2SD880
	Q701 TRANSISTOR	DTC124ES
	Q702 TRANSISTOR	JA101
	Q703 TRANSISTOR	JC501
	Q704, 705 TRANSISTOR	DTC124ES
	Q706, 707 TRANSISTOR	JC501
	D101, 102 VARI-CAP DIODE	ITT310
	D199 DIODE	1N4531
	D201–203 VARI-CAP DIODE	SVC321C3
	D204, 205 DIODE	1SS85
	D206, 207 DIODE	1N4531
	D301–303 DIODE	1N4531
	D401, 402 DIODE	1N4531
	D403 ZENER DIODE	RD5.1ESB2
	D406, 407 DIODE	1N4531
	D501–507 DIODE	1N4531
⚠	D601–604 DIODE	S5566
	D605 ZENER DIODE	RD6.2ESB2
	D701, 702 DIODE	1N4531
	D704–709 DIODE	1N4531
	D720–726 DIODE	1N4531
	D740 DIODE	1N4531
	D741 ZENER DIODE	RD12ESB1
	COILS, TRANSFORMERS AND FILTERS	
	L103 AXIAL INDUCTOR	LAU2R2M
	L104 COIL	ATC1003
	L201 COIL	ATB-100
	L202 COIL	ATD-023
	L301 AXIAL INDUCTOR	LAU2R2M
	L302 COIL	ATE-074
	L402 AXIAL INDUCTOR	LAU2R2M
	L701 AXIAL INDUCTOR	LAU220K
	T101 FM TRANSFORMER	ATE-063
	T102 COIL	ATC-194
	T201 COIL	ATB-095
	T202 RF TRANSFORMER	ATD1002
⚠	T601 POWER TRANSFORMER	ATT1065

Mark	Symbol & Description	Part No.
	F101 CERAMIC FILTER	ATF-155
	F102 CERAMIC FILTER	ATF-119
	F103 CERAMIC FILTER	ATF-107
	F201 CERAMIC FILTER	ATF1042
	CAPACITORS	
	TC201 CERAMIC TRIMMER	ACM-015
	TC202 CERAMIC TRIMMER	ACM-020
	TC203 CERAMIC TRIMMER	ACM-015
	C101 CERAMIC CAPACITOR	CCMCH040C50
	C102 CERAMIC CAPACITOR	CKDYF103Z50
	C103 CERAMIC CAPACITOR	CCDRH180J50
	C104 CERAMIC CAPACITOR	CKDYF103Z50
	C105 CERAMIC CAPACITOR	CCDCH020C50
	C106 CERAMIC CAPACITOR	CCDCH010C50
	C107 CERAMIC CAPACITOR	CCMSL101J50
	C108, 109 CERAMIC CAPACITOR	CKDYF103Z50
	C120 CERAMIC CAPACITOR	CKDYF103Z50
	C121 CERAMIC CAPACITOR	CCMCH150J50
	C122 CERAMIC CAPACITOR	CKDYF103Z50
	C123 CERAMIC CAPACITOR	CCMCH330J50
	C124 CERAMIC CAPACITOR	CCMCH080D50
	C125 CERAMIC CAPACITOR	CCDTH150J50
	C126 CERAMIC CAPACITOR	CCMCH150J50
	C127 ELECTR.CAPACITOR	CEAS470M16
	C128 CERAMIC CAPACITOR	CKMYB102K50
	C201 CERAMIC CAPACITOR	CKDYF103Z50
	C202, 203 CERAMIC CAPACITOR	CKDYF223Z50
	C210 CAPACITOR	CQSA431J50
	C211 CERAMIC CAPACITOR	CCMCH070D50
	C212 CERAMIC CAPACITOR	CKDYF223Z50
	C213 CERAMIC CAPACITOR	CCDCH560J50
	C214 CAPACITOR	CQSA301J50
	C215 ELECTR.CAPACITOR	CEAS470M16
	C220 CERAMIC CAPACITOR	CKDYF103Z50
	C221 CERAMIC CAPACITOR	CCMCH470J50
	C222, 223 ELECTR.CAPACITOR	CEAS4R7M50
	C224 CERAMIC CAPACITOR	CKDYF103Z50
	C225 CERAMIC CAPACITOR	CKDYX473M25
	C226 ELECTR.CAPACITOR	CEAS470M16
	C227 CERAMIC CAPACITOR	CKDYF223Z50
	C228 CERAMIC CAPACITOR	CKMYF102Z50
	C229 CERAMIC CAPACITOR	CKMYB102K50
	C230 CERAMIC CAPACITOR	CKDYF473Z50
	C231 ELECTR.CAPACITOR	CEAS470M16
	C232 CERAMIC CAPACITOR	CKDYF103Z50
	C233 CERAMIC CAPACITOR	CKDYX153M25
	C234 CERAMIC CAPACITOR	CKDYX104M25
	C235 ELECTR.CAPACITOR	CEAS4R7M50
	C236 ELECTR.CAPACITOR	CEAS221M10
	C237 CERAMIC CAPACITOR	CKDYB103K50
	C301, 302 CERAMIC CAPACITOR	CKDYF223Z50
	C303 CERAMIC CAPACITOR	CCDSL221J50
	C304 ELECTR.CAPACITOR	CEAS010M50

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Mark	Symbol & Description	Part No.
	Q203−205 TRANSISTOR	JC501
	Q301−303 TRANSISTOR	DTC124ES
	Q401−404 TRANSISTOR	DTA143ES
	Q405 N-FET	2SK246
	Q406 TRANSISTOR	2SC1740SLN
	Q407 N-FET	2SK246
	Q408 TRANSISTOR	DTC124ES
	Q410 TRANSISTOR	DTC124ES
	Q411, 412 TRANSISTOR	JC501
	Q413 TRANSISTOR	JA101
	Q414 TRANSISTOR	JC501
	Q501 TRANSISTOR	JC501
	Q502 TRANSISTOR	DTC124ES
	Q503, 504 TRANSISTOR	JC501
	Q506 TRANSISTOR	JA101
	Q601 TRANSISTOR	2SD880
	Q701 TRANSISTOR	DTC124ES
	Q702 TRANSISTOR	JA101
	Q703 TRANSISTOR	JC501
	Q704, 705 TRANSISTOR	DTC124ES
	Q706, 707 TRANSISTOR	JC501
	D101, 102 VARI-CAP DIODE	ITT310
	D199 DIODE	1N4531
	D201−203 VARI-CAP DIODE	SVC321C3
	D204, 205 DIODE	1SS85
	D206, 207 DIODE	1N4531
	D301−303 DIODE	1N4531
	D401, 402 DIODE	1N4531
	D403 ZENER DIODE	RD5.1ESB2
	D406, 407 DIODE	1N4531
	D501−507 DIODE	1N4531
⚠	D601−604 DIODE	S5566
	D605 ZENER DIODE	RD6.2ESB2
	D701, 702 DIODE	1N4531
	D704−709 DIODE	1N4531
	D720−726 DIODE	1N4531
	D740 DIODE	1N4531
	D741 ZENER DIODE	RD12ESB1

COILS, TRANSFORMERS AND FILTERS

Mark	Symbol & Description	Part No.
	L103 AXIAL INDUCTOR	LAU2R2M
	L104 COIL	ATC1003
	L201 COIL	ATB-100
	L202 COIL	ATD-023
	L301 AXIAL INDUCTOR	LAU2R2M
	L302 COIL	ATE-074
	L402 AXIAL INDUCTOR	LAU2R2M
	L701 AXIAL INDUCTOR	LAU220K
	T101 FM TRANSFORMER	ATE-063
	T102 COIL	ATC-194
	T201 COIL	ATB-095
	T202 RF TRANSFORMER	ATD1002
⚠	T601 POWER TRANSFORMER	ATT1065
	F101 CERAMIC FILTER	ATF-155
	F102 CERAMIC FILTER	ATF-119
	F103 CERAMIC FILTER	ATF-107
	F201 CERAMIC FILTER	ATF1042

CAPACITORS

Mark	Symbol & Description	Part No.
	TC201 CERAMIC TRIMMER	ACM-015
	TC202 CERAMIC TRIMMER	ACM-020
	TC203 CERAMIC TRIMMER	ACM-015
	C101 CERAMIC CAPACITOR	CCMCH040C50
	C102 CERAMIC CAPACITOR	CKDYF103Z50
	C103 CERAMIC CAPACITOR	CCDRH180J50
	C104 CERAMIC CAPACITOR	CKDYF103Z50
	C105 CERAMIC CAPACITOR	CCDCH020C50
	C106 CERAMIC CAPACITOR	CCDCH010C50
	C107 CERAMIC CAPACITOR	CCMSL101J50
	C108, 109 CERAMIC CAPACITOR	CKDYF103Z50
	C120 CERAMIC CAPACITOR	CKDYF103Z50
	C121 CERAMIC CAPACITOR	CCMCH150J50
	C122 CERAMIC CAPACITOR	CKDYF103Z50
	C123 CERAMIC CAPACITOR	CCMCH330J50
	C124 CERAMIC CAPACITOR	CCMCH080D50
	C125 CERAMIC CAPACITOR	CCDTH150J50
	C126 CERAMIC CAPACITOR	CCMCH150J50
	C127 ELECTR.CAPACITOR	CEAS470M16
	C128 CERAMIC CAPACITOR	CKMYB102K50
	C201 CERAMIC CAPACITOR	CKDYF103Z50
	C202, 203 CERAMIC CAPACITOR	CKDYF223Z50
	C210 CAPACITOR	CQSA431J50
	C211 CERAMIC CAPACITOR	CCMCH070D50
	C212 CERAMIC CAPACITOR	CKDYF223Z50
	C213 CERAMIC CAPACITOR	CCDCH560J50
	C214 CAPACITOR	CQSA301J50
	C215 ELECTR.CAPACITOR	CEAS470M16
	C220 CERAMIC CAPACITOR	CKDYF103Z50
	C221 CERAMIC CAPACITOR	CCMCH470J50
	C222, 223 ELECTR.CAPACITOR	CEAS4R7M50
	C224 CERAMIC CAPACITOR	CKDYF103Z50
	C225 CERAMIC CAPACITOR	CKDYX473M25
	C226 ELECTR.CAPACITOR	CEAS470M16
	C227 CERAMIC CAPACITOR	CKDYF223Z50
	C228 CERAMIC CAPACITOR	CKMYF102Z50
	C229 CERAMIC CAPACITOR	CKMYB102K50
	C230 CERAMIC CAPACITOR	CKDYF473Z50
	C231 ELECTR.CAPACITOR	CEAS470M16
	C232 CERAMIC CAPACITOR	CKDYF103Z50
	C233 CERAMIC CAPACITOR	CKDYX153M25
	C234 CERAMIC CAPACITOR	CKDYX104M25
	C235 ELECTR.CAPACITOR	CEAS4R7M50
	C236 ELECTR.CAPACITOR	CEAS221M10
	C237 CERAMIC CAPACITOR	CKDYB103K50
	C301, 302 CERAMIC CAPACITOR	CKDYF223Z50
	C303 CERAMIC CAPACITOR	CCDSL221J50
	C304 ELECTR.CAPACITOR	CEAS010M50
	C305−308 CERAMIC CAPACITOR	CKDYF223Z50
	C309 ELECTR.CAPACITOR	CEAS4R7M50
	C310 ELECTR.CAPACITOR	CEAS010M50
	C311 ELECTR.CAPACITOR	CEAS470M16
	C312 CERAMIC CAPACITOR	CKDYF223Z50
	C313 ELECTR.CAPACITOR	CEAS470M16
	C401 ELECTR.CAPACITOR	CEAS010M50
	C402 ELECTR.CAPACITOR	CEAS470M16
	C403, 404 CERAMIC CAPACITOR	CCMCH150J50
	C405 CERAMIC CAPACITOR	CKDYF103Z50
	C406 ELECTR.CAPACITOR	CEAS470M16
	C407 CERAMIC CAPACITOR	CKDYB103K50
	C408 AUDIO FILM CAPACITOR	CFTXA224J50
	C409 CERAMIC CAPACITOR	CKDYF223Z50
	C410 ELECTR.CAPACITOR	CEAS470M16
	C412 ELECTR.CAPACITOR	CEAS010M50
	C413 CERAMIC CAPACITOR	CKDYF103Z50
	C414 CERAMIC CAPACITOR	CKDYX473M25
	C415, 416 ELECTR.CAPACITOR	CEAS470M10
	C417 ELECTR.CAPACITOR	CEAS470M16
	C418 ELECTR.CAPACITOR	CEAS010M50
	C419 ELECTR.CAPACITOR	CEAS471M16
	C420 CERAMIC CAPACITOR	CKDYF473Z50
	C430 ELECTR.CAPACITOR	CEAS470M16
	C501 ELECTR.CAPACITOR	CEAS4R7M50
	C502 CERAMIC CAPACITOR	CKDYF473Z50
	C503 ELECTR.CAPACITOR	CEAS470M16
	C504 ELECTR.CAPACITOR	CEAS101M16
	C505 ELECTR.CAPACITOR	CEAS470M16
	C506, 507 CERAMIC CAPACITOR	CKMYB102K50
	C508−510 ELECTR.CAPACITOR	CEAS4R7M50
	C511 ELECTR.CAPACITOR	CEAS1R5M50
	C512 ELECTR.CAPACITOR	CEASR22M50
	C513 CERAMIC CAPACITOR	CKDYF223Z50
	C514 CAPACITOR	CQSA471J50
	C515, 516 CERAMIC CAPACITOR	CKDYB222K50
	C601 CERAMIC CAPACITOR	CKDYF473Z50
	C602 ELECTR.CAPACITOR	CEAS332M35
	C603 ELECTR.CAPACITOR	CEAS470M10
	C604 ELECTR.CAPACITOR	CEAS470M16
	C605 CERAMIC CAPACITOR	CKDYF473Z50
	C606 ELECTR.CAPACITOR	CEAS470M10
	C702 ELECTR.CAPACITOR	CEAS4R7M50
	C704 CERAMIC CAPACITOR	CKDYF473Z50
	C705 ELECTR.CAPACITOR (22000/5.5)	ACH1023
	C706 CERAMIC CAPACITOR	CCMSL101J50
	C707 ELECTR.CAPACITOR	CEAS010M50
	C708 ELECTR.CAPACITOR	CEAS2R2M50

RESISTORS

Mark	Symbol & Description	Part No.
	VR502 VR (4.7k)	VRTB6VS472
	R126 CARBONFILM RESISTOR	RD1/4PM□□□J
	R226 CARBONFILM RESISTOR	RD1/4PM□□□J
	R229 CARBONFILM RESISTOR	RD1/4PM□□□J
	R303 CARBONFILM RESISTOR	RD1/4PM□□□J
	R401 CARBONFILM RESISTOR	RD1/4PM□□□J
	R430−442 METALFILM RESISTER	RN1/4PC2002F
	R443−453 METALFILM RESISTER	RN1/4PC1002F
	R502 CARBONFILM RESISTOR	RD1/4PM□□□J
	R504−508 CARBONFILM RESISTOR	RD1/4PM□□□J
	R511, 512 CARBONFILM RESISTOR	RD1/4PM□□□J
	R523−526 CARBONFILM RESISTOR	RD1/4PM□□□J
	R601 FUSLIBLE RESISTOR	RFA1/4PS390J
	OTHER RESISTORS	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X201 CERAMIC RESONATOR	ATF1027
	X401 CRYSTAL RESONATOR	ASS1042
	X701 RESONATOR(4.19MHz)	ASS1018
	SCREW	ABA1012
	ANTENNA TERMINAL 4-P	AKA1010
	PIN JACK (2P)	AKB1039
	MINI JACK	AKN-207

2.2 SCHMATIC DIAGRAM

1. RESISTORS:
   Indicated in Ω, 1/8, 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance.

2. CAPACITORS:
   Indicated in capacity (μF)/ voltage (V) unless otherwise noted p;pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT:
   ▭ ; DC voltage (V) at no input signal.
   Value in (1) is DC voltage at rated power.
   ⇐mA ; DC current at no input signal.
   mV ; Signal voltage at FM 400Hz±75Hz DEV.

4. OTHERS:
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safty factor of the part.
   Therefore, when replacing, be sure to use parts of identical designation.
   * marked capacitor and resistor have parts number.
   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

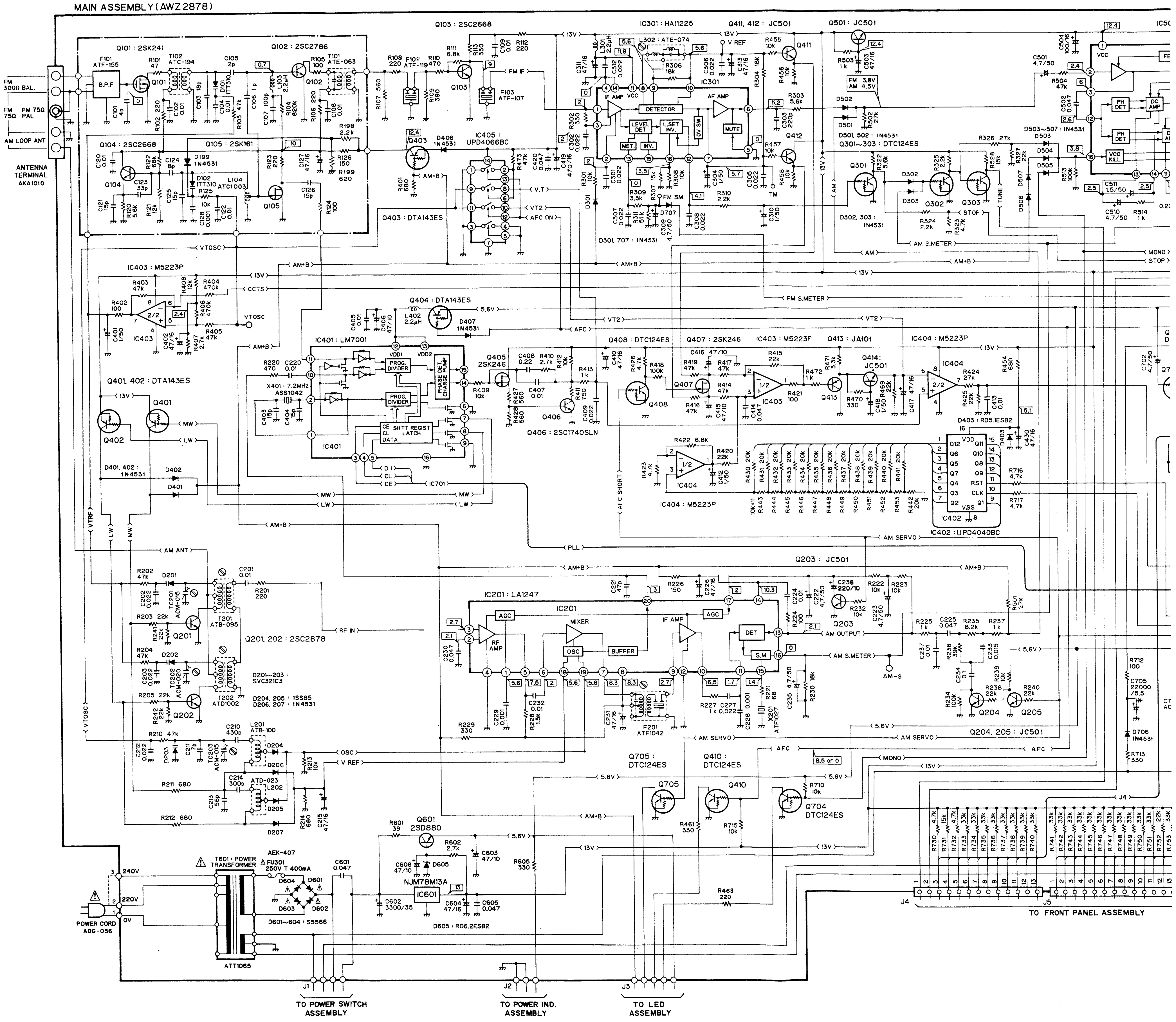
5. SWITCHES:
   FRONT PANEL ASSEMBLY
   S701: 2/14/26
   S702: 3/15/27
   S703: 5/17/29
   S704: MEMORY
   S705: FM-MONO
   S706: SIG
   S707: SIL.SRV
   S711: 1/13/25
   S712: 9/21/33
   S713: 4/16/28
   S714: 6/18/30
   S715: DOWN
   S716: AM SRV
   S717: UP
   S721: 7/19/31
   S722: 8/20/32
   S723: 10/22/34
   S724: 11/23/35
   S725: 12/24/36
   S726: CCTS
   S727: BAND
   POWER SWITCH ASSEMBLY
   S601: POWER ON — OFF
   The underline indicates the switch position.

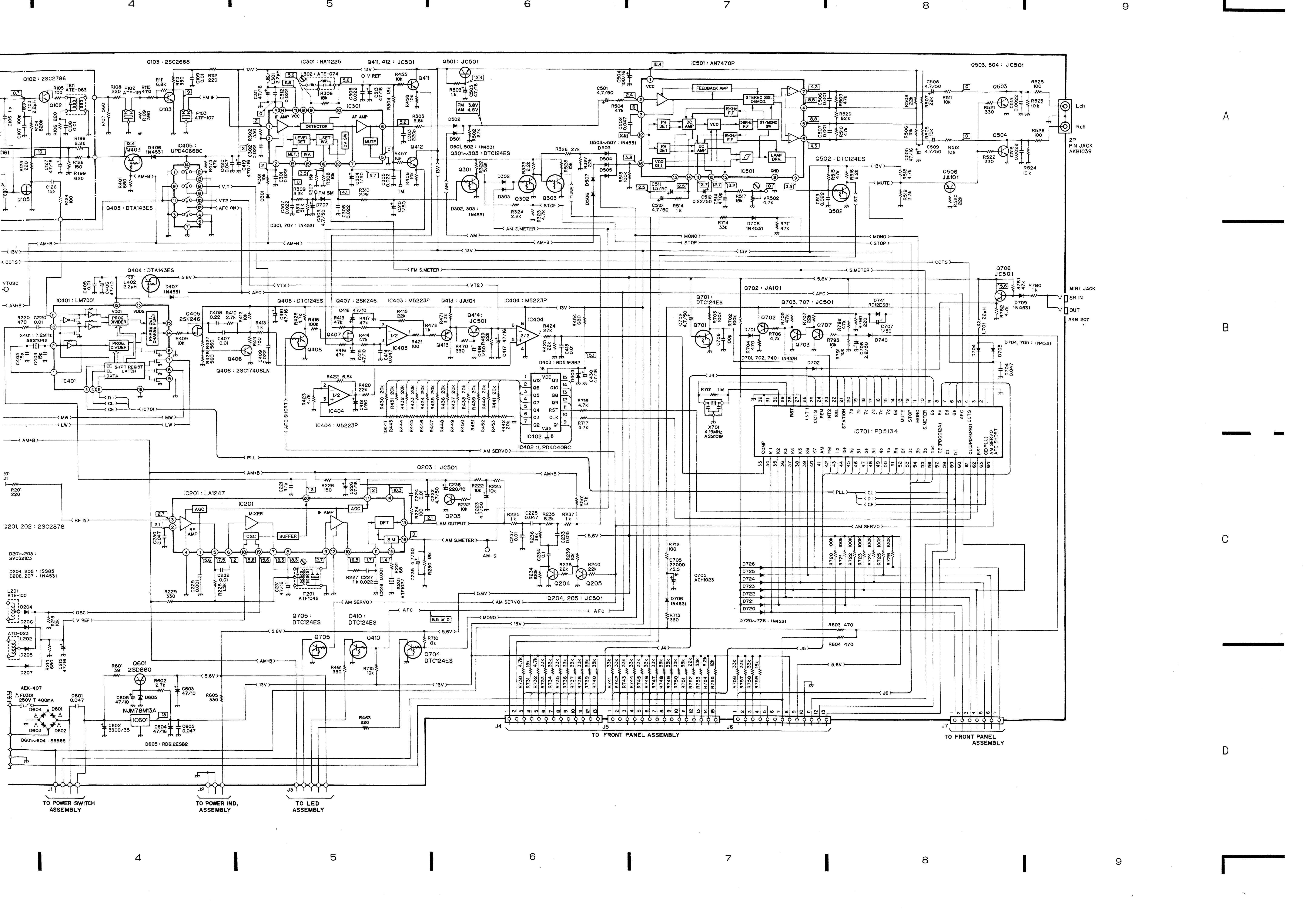
Line voltage can be changed with following steps.
1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the connection of the MAIN Assembly primary pins.
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

220V ————————

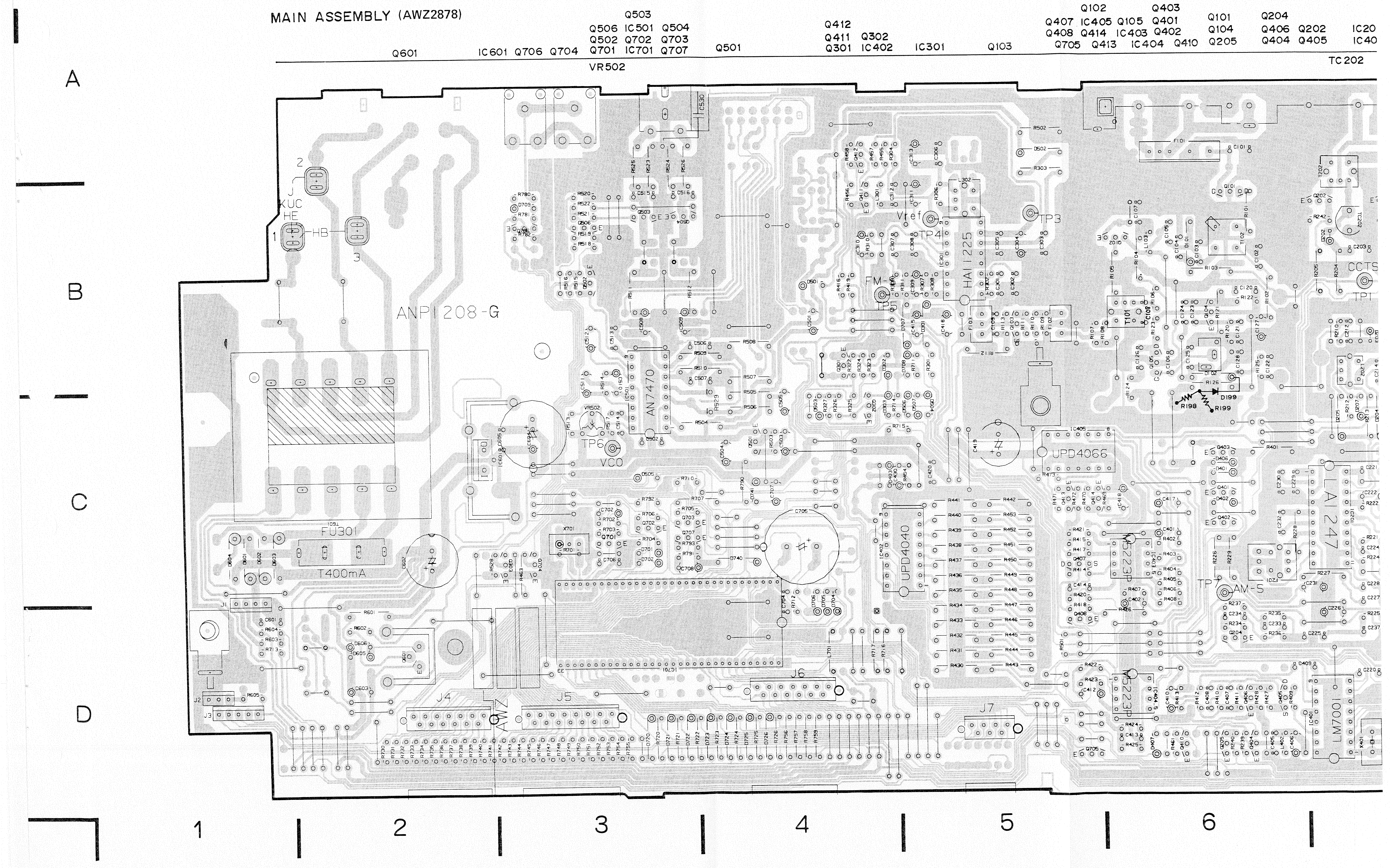
240V – – – – – –


MAIN ASSEMBLY(AWZ2878)
ANTENNA TERMINAL AKA1010
FM 300Ω BAL.
FM 75Ω PAL
AM LOOP ANT
Q101 : 2SK241
Q102 : 2SC2786
Q103 : 2SC2668
Q104 : 2SC2668
Q105 : 2SK161
IC301 : HA11225
Q411, 412 : JC501
Q501 : JC501
IC405 : UPD4066BC
Q403 : DTA143ES
IC403 : M5223P
Q404 : DTA143ES
IC401 : LM7001
Q405 2SK246
Q406 : 2SC1740SLN
Q408 : DTC124ES
Q407 : 2SK246
IC403 : M5223F
Q413 : JA101
IC404 : M5223P
IC402 : UPD4040BC
Q401, 402 : DTA143ES
IC201 : LA1247
Q203 : JC501
Q201, 202 : 2SC2878
Q204, 205 : JC501
Q705 : DTC124ES
Q410 : DTC124ES
Q704 DTC124ES
Q601 2SD880
IC601 NJM78M13A
T601 : POWER TRANSFORMER ATT1065
POWER CORD ADG-056
TO POWER SWITCH ASSEMBLY
TO POWER IND. ASSEMBLY
TO LED ASSEMBLY
TO FRONT PANEL ASSEMBLY



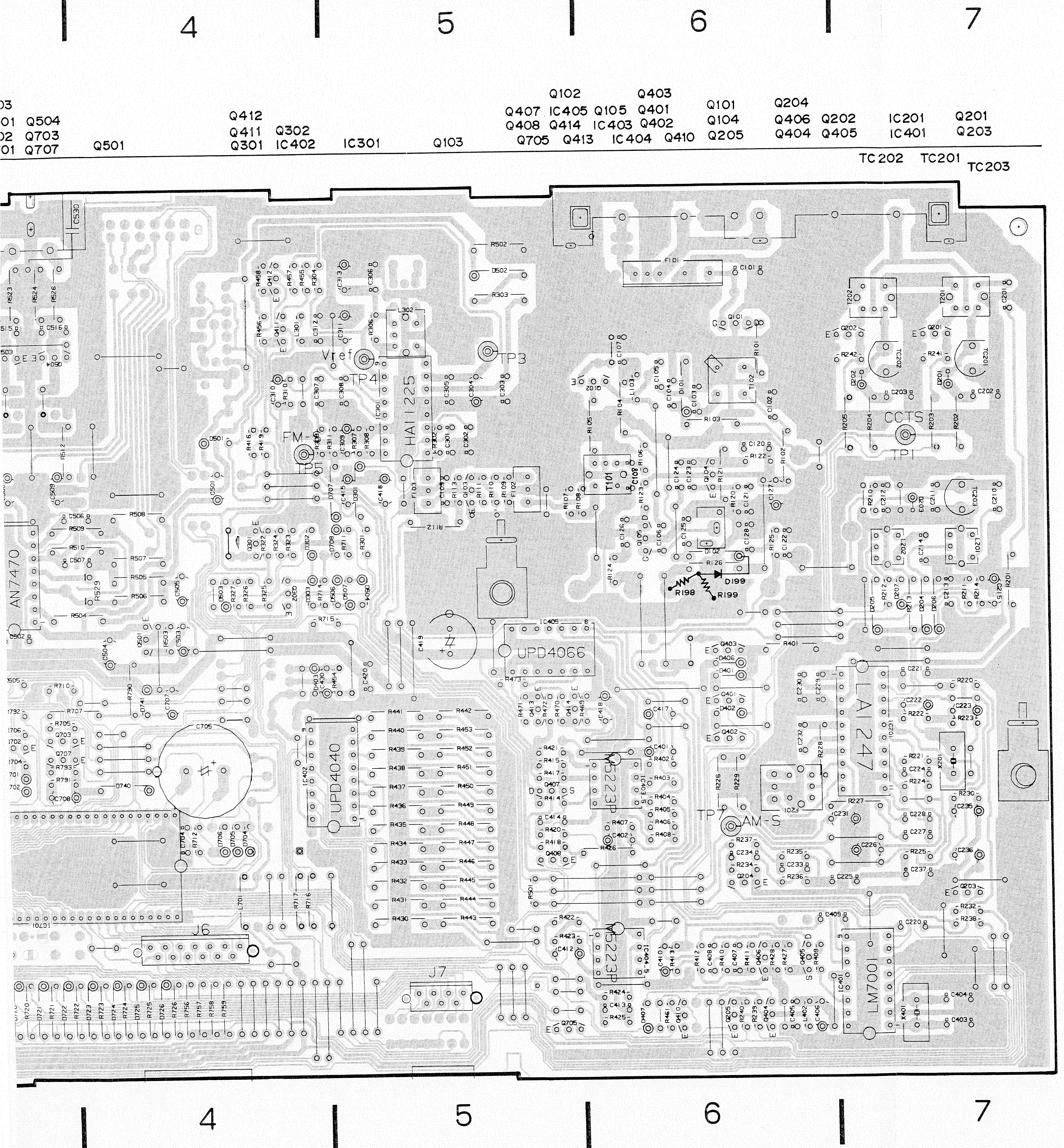
Q102 : 2SC2786
Q103 : 2SC2668
T101 ATE-063
F102 ATF-119
F103 ATF-107
FM IF
Q403 : DTA143ES
IC405 : UPD4066BC
D406 1N4531
IC301 : HA11225
T302 : ATE-074
IF AMP
DETECTOR
AF AMP
LEVEL DET
L.SET INV.
QV SW
MUTE
MET.
INV.
FM SM
TM
D301, 707 : 1N4531
Q411, 412 : JC501
Q501 : JC501
FM 3.8V
AM 4.5V
D501, 502 : 1N4531
Q301~303 : DTC124ES
D302, 303 : 1N4531
D503~507 : 1N4531
AM S.METER
STOP
TUNE
IC501 : AN7470P
FEEDBACK AMP
STEREO SIG. DEMOD.
PH DET
DC AMP
VCO
19KHz F.F
38KHz F.F
ST/MONO SW
VCO KILL
LAMP DRV.
GND
VCC
Q503, 504 : JC501
Q502 : DTC124ES
Q506 JA101
MUTE
ST
Lch
Rch
2P PIN JACK AKB1039
Q404 : DTA143ES
D407 1N4531
IC401 : LM7001
X401 : 7.2MHz ASS1042
PROG. DIVIDER
PHASE DET CHARGE PUMP
SHIFT REGIST LATCH
Q405 2SK246
Q406 : 2SC1740SLN
Q408 : DTC124ES
Q407 : 2SK246
IC403 : M5223P
Q413 : JA101
Q414 : JC501
IC404 : M5223P
D403 : RD5.1ESB2
IC402 : UPD4040BC
AFC SHORT
VTOSC
AM+B
13V
CCTS
5.6V
AFC
VT2
FM S.METER
S.METER
MONO
MW
LW
PLL
AM SERVO
Q706 JC501
Q701 : DTC124ES
Q702 : JA101
Q703, 707 : JC501
D741 RD12ESB1
D701, 702, 740 : 1N4531
D709 1N4531
D704, 705 : 1N4531
MINI JACK
SR IN
OUT
AKN-207
R701 1M
X701 4.19MHz ASS1018
IC701 : PD5134
Q203 : JC501
IC201 : LA1247
AGC
RF AMP
MIXER
OSC
BUFFER
IF AMP
DET
S.M
RF IN
AM OUTPUT
AM S.METER
AM-S
F201 ATF1042
X201 ATF1027
Q201, 202 : 2SC2878
D201~203 : SVC321C3
D204, 205 : 1SS85
D206, 207 : 1N4531
L201 ATB-100
ATD-023
Q204, 205 : JC501
Q204
Q205
C705 ACH1023
D706 1N4531
D720~726 : 1N4531
Q705 DTC124ES
Q410 DTC124ES
Q704 DTC124ES
8.5 or 0
V REF
OSC
Q601 2SD880
IC601 NJM78M13A
D605 : RD6.2ESB2
AEK-407
FU301 250V T 400mA
D601~604 : S5566
J4
J5
J6
J7
TO FRONT PANEL ASSEMBLY
TO FRONT PANEL ASSEMBLY
J1
TO POWER SWITCH ASSEMBLY
J2
TO POWER IND. ASSEMBLY
J3
TO LED ASSEMBLY
4
5
6
7
8
9
A
B
C
D

2.3 P.C. BOARD DIAGRAM



MAIN ASSEMBLY (AWZ2878)

1
2
3
4
5
6
A
B
C
D
Q601
IC601 Q706 Q704
Q506 Q502 Q701
Q503 IC501 Q702 IC701
Q504 Q703 Q707
VR502
Q501
Q412 Q411 Q301
Q302 IC402
IC301
Q103
Q407 Q408 Q705
Q102 IC405 Q414 Q413
Q105 IC403 IC404
Q403 Q401 Q402 Q410
Q101 Q104 Q205
Q204 Q406 Q404
Q202 Q405
TC202
ANP1208-G
FU301
T400mA
AN7470
HA11225
UPD4066
UPD4040
LA1247
M5223P
LM7001
TP3
TP4
TP6
TP7
VCO
Vref
FM-
AM-S
CCTS
TP1
KUC
HE
HB
J1
J2
J3
J4
J5
J6
J7
AWZ
C705
C530
X701
D199
R198
R199


4
5
6
7
8
Q504
Q703
Q707
Q501
Q412
Q411
Q301
Q302
IC402
IC301
Q103
Q102
Q407
IC405
Q105
Q408
Q414
IC403
Q705
Q413
IC404
Q403
Q401
Q402
Q410
Q101
Q104
Q205
Q204
Q406
Q404
Q202
Q405
IC201
IC401
Q201
Q203
TC202
TC201
TC203
HA11225
UPD4066
UPD4040
LA1247
LM7001
AN7470
J6
J7
TP1
TP3
TP4
TP7
Vref
FM-S
AM-S
CCTS
T101
F101
L302
R198
R199
D199
9

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wirng symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E○ ○ ○	E○ ○ ○ or E○ ○ ○	Transistor
Q215 ○ ○ ○	○ ○ ○ or ○ ○ ○	Radiator type transistor
◎ D203 ○	D203 ○—▶|—○	Diode
○ R237 ○	R237 ○—/\/\/—○	Resistor
◎ C513 ○	○—|(—○ +	Capacitor (Polarity)
C518	○—||—○	Capacitor (Non-polarity)

3. The capactor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

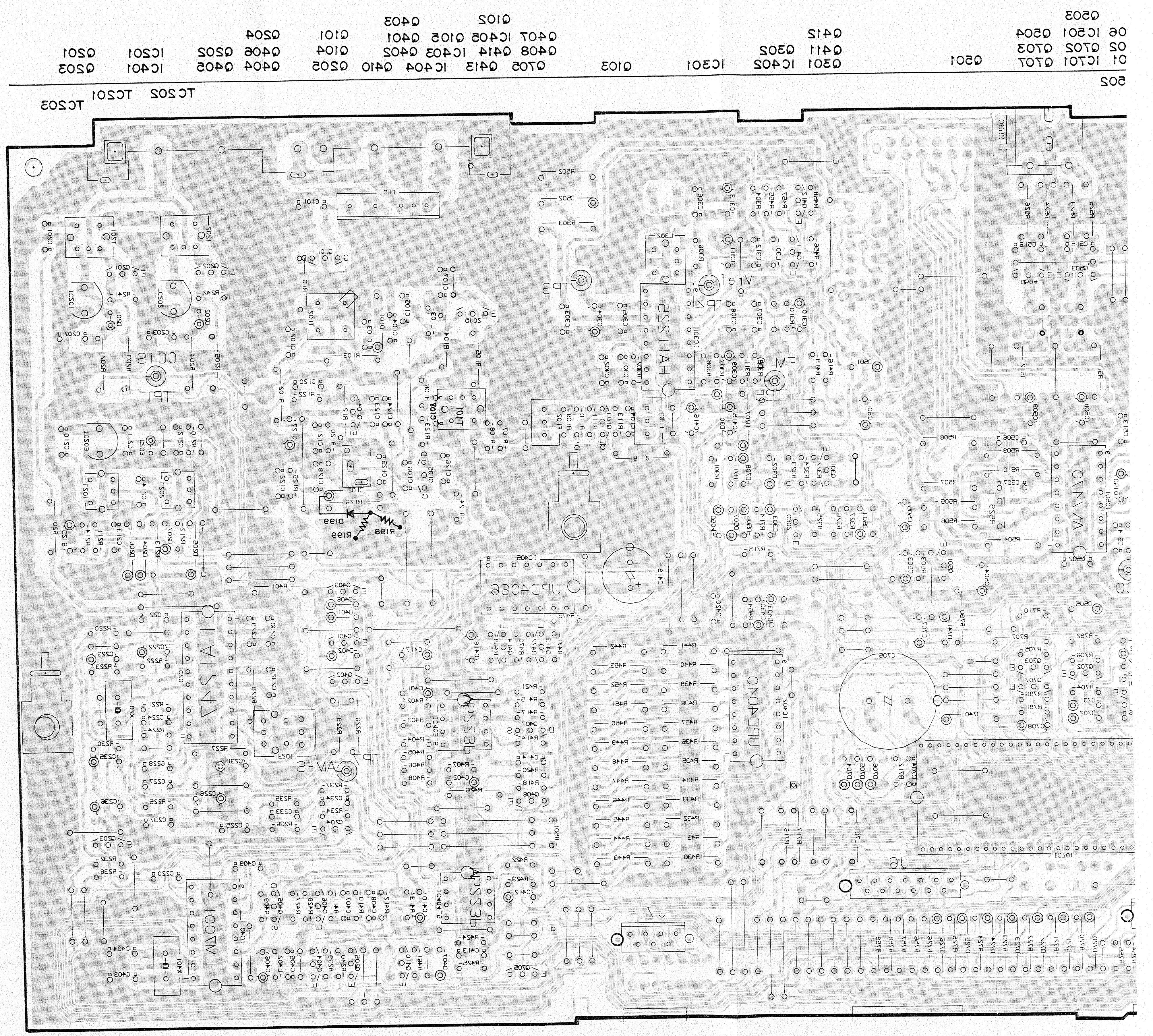
A

B

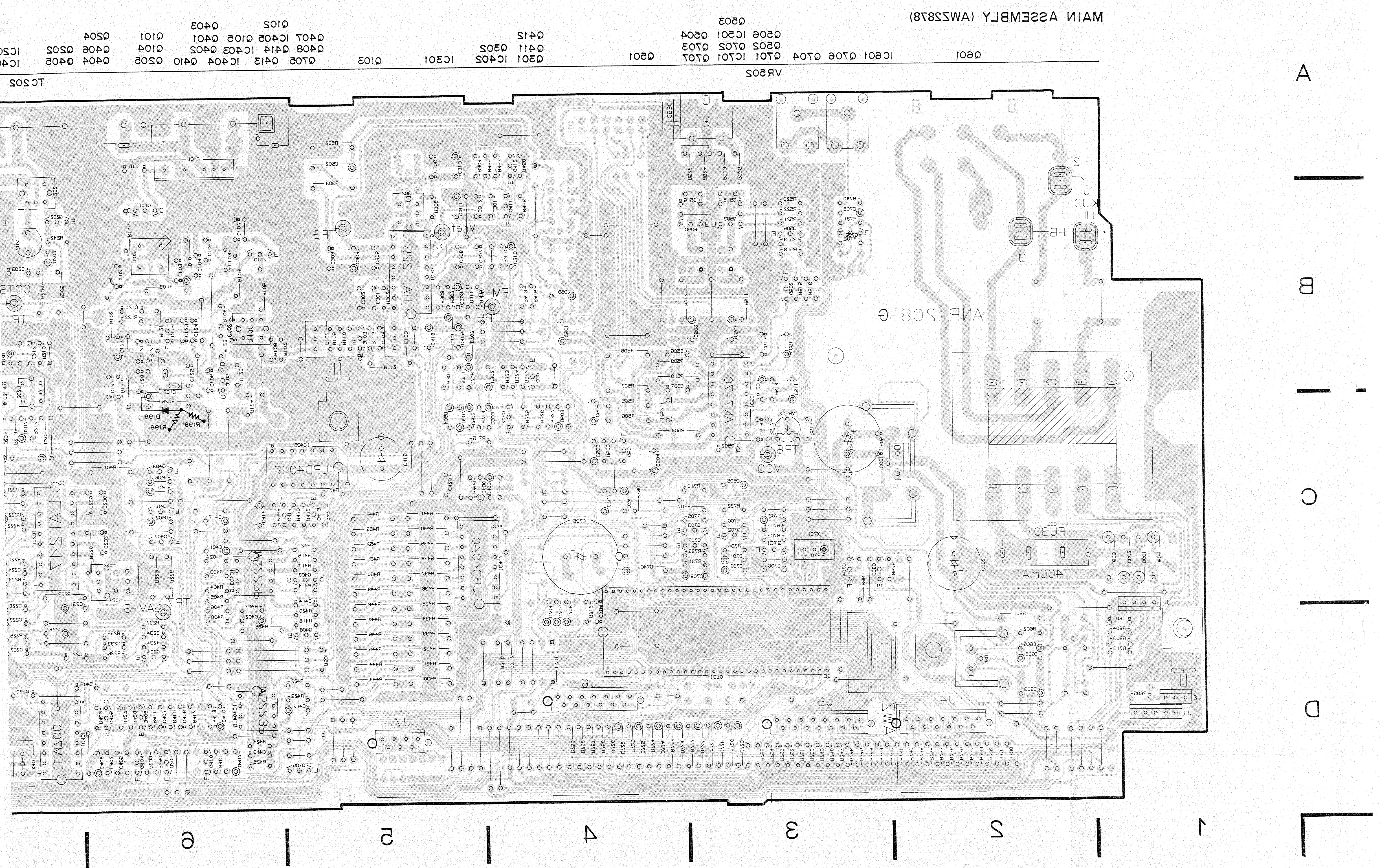
C

D

This P.C.B. connection diagram is viewed from the foil side.


8
7
6
5
4
A
B
C
D
TC201
TC202
TC203
TP1
TP3
TP4
TP7
CT1
J6
J7

2.3 P.C. BOARD DIAGRAM


MAIN ASSEMBLY (AWZ2878)
A
B
C
D
1
2
3
4
5
6
Q601
IC601 Q706 Q704
Q506 IC501 Q504
Q505 Q702 Q703
Q701 IC701 Q707
Q503
VR502
Q501
Q412
Q411 Q302
Q301 IC402
IC301
Q103
Q102
Q407 IC405 Q105 Q401
Q408 Q414 IC403 Q402
Q705 Q413 IC404 Q410
Q403
Q101
Q104
Q205
Q204
Q406 Q202
Q404 Q405
TC202
ANP1208-G
AN7470
HA11225
UPD4066
UPD4040
UPD2232
LA1247
LM7001
FU301
T400mA
TP3
TP4
TP5
TP6
VCO
Vref
FM
AM-S
J4
J5
J6
J7
XM